SELECTED READINGS IN ECONOMICS

BULLOCK

Emilie Louise Wells

SELECTIONS AND DOCUMENTS IN ECONOMICS

EDITED BY

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SELECTIONS AND DOCUMENTS IN ECONOMICS

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SELECTED READINGS IN ECONOMICS

BY

CHARLES J. BULLOCK

ASSISTANT PROFESSOR OF ECONOMICS IN HARVARD UNIVERSITY

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PREFACE

This volume aims to supply the collateral reading needed for a general course of study in economics. It makes no effort to present selections upon all the topics treated in such a course, but endeavors merely to provide supplementary material, historical, descriptive, and theoretical, which will enrich the instruction offered. The footnotes to the several selections disclose the extent of the editor's indebtedness to various authors who have consented to the reproduction of passages from their works. In this place, however, acknowledgment should be made of the helpful advice and criticism received from the editor's colleague, Professor F. W. Taussig, of Harvard University.

CHARLES J. BULLOCK

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SELECTED READINGS IN ECONOMICS

CHAPTER I

THE EFFECT OF THE PHYSIOGRAPHY OF NORTH AMERICA UPON MEN OF EUROPEAN ORIGIN[1]

In their organic life the continents of America have always stood somewhat apart from those of the Old World. This isolation is marked in every stage of their geological history. In each geological period they have many forms that never found their way to the other lands, and we fail to find there many species that are abundant in the continents of the Old World.

The same causes that kept the animal and vegetable life of the Americas distinct from Europe and Asia have served to keep those continents apart from the human history of the Old World. Something more than the relations that are patent on a map are necessary to a proper understanding of the long-continued isolation of these continents.

In the first place, we may notice the fact that from the Old World the most approachable side of these continents lies on the west. Not only are the lands of the New and Old World there brought into close relations with each other, but the ocean streams of the North Pacific flow toward America. Moreover, the North Pacific is a sea of a calmer temper than the North Atlantic, and the chance farers over its surface would be

[1] By Nathaniel S. Shaler. Reprinted from Winsor's Narrative and Critical History of America, Vol. IV, by arrangement with the publishers, Messrs. Houghton, Mifflin & Co., Boston.

more likely to survive its perils. In the North Atlantic, over which alone the Aryan peoples could well have found their way to America, we have a wide sea, which is not only the stormiest in the world, but its currents set strongly against western-going ships, and the prevailing winds blow from the west.[1] If it had been intended that America should long remain unknown to the seafaring peoples of Semitic or Aryan race, it would not have been easy, within the compass of earthly conditions, to accomplish it in a more effective manner than it has been done by the present geography.

The result is that man, who doubtless originated in the Old World, early found his way to America by the Pacific; and all the so-called indigenous races known to us in the Americas seem to have closer relations to the peoples living in northern Asia than to those of any other country. It is pretty clear that none of the aboriginal American peoples have found their way to these continents by way of the Atlantic.

Although the access to the continent of North America is much more easily had upon its western side, and though all the early settlements were probably made that way, the configuration of the land is such that it is not possible to get easy access to the heart of the continent from the Pacific shore; so that though the Atlantic ocean was most forbidding and difficult as a way to America, once passed, it gave the freest and best access to the body of the continent. In the west the Cordilleras are a formidable bar to those who seek to enter the continent from the Pacific. None but a modern civilization would ever have forced its barriers of mountains and deserts. An ancient civilization, if it had penetrated America from the west, would have recoiled from the labor of traversing this mountain system, that combines the difficulties of the Alps and the Sahara. If European emigration had found such a mountain system on the eastern face of the continent, the history of America would

[1] It is likely that some part of the Aryan folk found their way to the Pacific shore in Korea and elsewhere; but the Aryan migrations setting to the east must have been uncommon, and the chance of Caucasian blood reaching America by this route small.

have been very different. Scarcely any other continent offers such easy ingress as does this continent to those who come to it from the Atlantic side. The valleys of the St. Lawrence, the Hudson, the Mississippi, in a fashion, also, of the Susquehanna and the James, break through or pass around the low coast mountains, and afford free ways into the whole of the interior that is attractive to European peoples. No part of the Alleghenian system presents any insuperable obstacles to those who seek to penetrate the inner lands. The whole of its surface is fit for human uses; there are neither deserts of sand nor of snow. The ax alone would open ways readily passable to men and horses. So that when the early settlers had passed the sea, all their formidable geographical difficulties were at an end, — with but little further toil the wide land lay open to them. I propose in the subsequent pages to give a sketch of the physical conditions of this continent, with reference to the transplanted civilization that has developed upon its soil. It will be impossible, within the limits of this essay, to do more than indicate these conditions in a very general way, for the details of the subject would constitute a work in itself. It will be most profitable for us first to glance at the general relations of climate and soil that are found in North America, so far as these features bear upon the history of the immigration it has received from Europe.

The climate of North America south of the Laurentian mountains and east of the Rocky mountains is much more like that of Europe than of any we find in the other continents. Although there are many points of difference, these variations lie well within the climatic range of Europe itself. On the south Mexico may well be compared to Italy and Spain; in the southern parts of the Mississippi valley we have conditions in general comparable to those of Lombardy and central France; and in the northern portions of that area and along the sea border we can find fair parallels for the conditions of Great Britain, Germany, or Scandinavia. As is well known, the range of temperature during the year varies much more in America than in Europe, but these variations in themselves are of small

importance. Man in a direct way is not much affected by temperature; his elastic body, helped by his arts, may within certain limits neglect this element of climate. The real question is how far these temperatures affect the products of the soil upon which his civilization depends. In the case of most plants and domestic animals, their development depends more upon the summer temperature, or that of the spring season, than upon the winter climate. Now the summer climates of America are more like those of Europe than are those of the winter. So the new-won continent offered to man a chance to rear all the plants and animals which he had brought to domesticity in the Old World.

The general character of the soil of North America is closely comparable with that of Europe, yet it has certain noteworthy peculiarities. In the first place, there is a larger part of America which has been subjected to glacial action than what we find in Europe. In Europe only the northern half of Great Britain, the Scandinavian peninsulas, a part of northern Germany, and the region of Switzerland were under the surface of the glaciers during the last glacial period. In America practically all of the country north of the Susquehanna, and more than half of the states north of the Ohio, had their soils influenced by this ice period. The effects of glaciation on the soils of the region where it has acted are important. In the first place, the soils thus produced are generally clayey and of a rather stubborn nature, demanding much care and labor to bring them into a shape for the plow. The surface is usually thickly covered with stones, which have to be removed before the plow can be driven. I have estimated that not less than an average of thirty days' labor has been given to each acre of New England soil to put it into arable condition after the forest has been removed; nearly as much labor has to be given to removing the forest and undergrowth: so that each cultivated acre in this glacial region requires about two months' labor before it is in shape for effective tillage.[1] When so prepared

[1] I have elsewhere (Introduction to the Memorial History of Boston) noticed the fact that this difficulty in clearing the glaciated soils led the early settlers

the soils of glaciated districts are of a very even fertility. They hold the same character over wide areas, and their constitution is the same to great depths. Though never of the highest order of fertility, they remain for centuries constant in their power. I have never seen a worn-out field of this sort. Another peculiarity of the American soils is the relatively large area of limestone lands which the country affords. America abounds in deposits of this nature, which produce soils of the first quality, extremely well fitted to the production of grass and grains. Although statistical information is not to be obtained on such a matter, I have no doubt, after a pretty close scrutiny of both America and Europe, that the original fertility of America was greater than that of Europe; but that, on the whole, the regions first settled by Europeans were much more difficult to subdue than the best lands of central and southern Europe had been.[1]

The foregoing statement needs the following qualification: owing to the relative dryness and heat of the American summer, the forests are not so swampy as they are in northern Europe, and morasses are generally absent. It required many centuries of continued labor to bring the surface of northern Germany, northern France, and of Britain into conditions fit for tillage.

Next to deserts and snowy mountains, swamps are the greatest barriers to the movements of man. If the reader will follow the interesting account of the Saxon Conquest given in Mr. Green's volume on "The Making of England," he will see how

of New England to use the poorer soils first. Along the shore and the rivers there is a strip of sandy terrace deposits, the soils of which are rather lean, but which are free from bowlders, so that the labor of clearing was relatively small. All, or nearly all, the first settlements in the glaciated districts were made on this class of soils.

[1] The slow progress of our agricultural exports, during the first two hundred years of this country, is in good part to be explained by the stubborn character of the soil which was then in use. The only easily subdued soils in use before 1800 were those of Virginia and Maryland. The sudden advance of the export trade in grain during the last fifty years marks the change which brought the great areas of non-glaciated soils of the Mississippi valley and the South under cultivation.

the tracts of marsh and marshy forest served for many centuries to limit the work of subjugation. In America there are no extensive bogs or wet forests in the upland district south of the St. Lawrence, except in Maine and the British provinces. In all other districts fire or the ax can easily bring the surface into a shape fit for cultivation. In taking an account of the physical conditions which formed the subjugation of North America by European colonies, we must give a large place to this absence of upland swamps and the dryness of the forests, which prevented the growth of peaty matter within their bounds.

The success of the first settlements in America was also greatly aided by the fact that the continent afforded them a new and cheaper source of bread, in the maize or Indian corn which was everywhere used by the aborigines of America. It is difficult to convey an adequate impression of the importance of this grain in the early history of America. In the first place, it yields not less than twice the amount of food per acre of tilled land, with much less labor than is required for an acre of small grains; it is far less dependent on the changes of seasons; the yield is much more uniform than that of the old European grains; the harvest need not be made at such a particular season; the crops may with little loss be allowed to remain ungathered for weeks after the grain is ripe; the stalks of the grain need not be touched in the harvesting, the ears alone being gathered; these stalks are of greater value for forage than is the straw of wheat and other similar grains. Probably the greatest advantage of all that this beneficent plant afforded to the early settlers was the way in which it could be planted without plowing, amid the standing forest trees which had only been deadened by having their bark stripped away by the ax. This rough method of tillage was unknown among the peoples of the Old World. None of their cultivated plants were suited to it; but the maize admitted of such rude tillage. The aborigines, with no other implements than stone axes and a sort of spade armed also with stone, would kill the forest trees by girdling or cutting away a strip around the bark. This admitted the light to the

soil. Then breaking up patches of earth, they planted the grains of maize among the standing trees ; its strong roots readily penetrated deep into the soil, and the strong tops fought their way to the light with a vigor which few plants possess. The grain was ready for domestic use within three months from the time of planting, and in four months it was ready for the harvest.

The beginnings in civilization which the aborigines of this country had made, rested on this crop and on the pumpkin, which seems to have been cultivated with it by the savages, as it still is by those who inherited their lands and their methods of tillage. The European colonists almost everywhere and at once adopted this crop and the methods of tillage which the Indians used. Maize fields, with pumpkin vines in the interspaces of the plants, became for many years the prevailing, indeed almost the only, crop throughout the northern part of America. It is hardly too much to say, that, but for these American plants and the American method of tilling them, it would have been decidedly more difficult to have fixed the early colonies on this shore.

Another American plant has had an important influence on the history of American commerce, though it did not aid in the settlement of the country, — tobacco. That singular gift of the New World to the Old quickly gave the basis of a great export to the colonies of Maryland, Virginia, and North Carolina; it alone enabled the agriculture of the southern colonies to outgrow in wealth those which were planted in more northern soil. To this crop, which demands much manual labor of an unskilled kind, and rewards it well, we owe the rapid development of African slavery. It is doubtful if this system of slavery would ever have flourished if America had been limited in its crops to those plants which the settlers brought from the Old World. Although African slavery existed for a time in the states north of the tobacco region, it died away in them even before the humanitarian sentiments of modern times could have aided in its destruction; it was the profitable nature of tobacco crops which fixed this institution on our soil, as it was

the great extension of cotton culture which made this system take on its overpowering growth during the first decades of the nineteenth century.

Another interesting effect of the conditions of tillage which met the early settlers upon this soil depends upon the peculiar distribution of forests in North America. All those regions which were first occupied by European peoples were covered by very dense forests. To clear these woods away required not less than thirty days' labor to each acre of land. In the glaciated districts, as before remarked, this labor of preparation was nearly doubled. The result was that the area of tillage only slowly expanded as the population grew denser, and the surplusage of grain for export was small during the first two centuries. When in the nineteenth century the progress westward suddenly brought the people upon the open lands of the prairies, the extension of tillage went on with far greater celerity. We are now in the midst of the great revolution that these easily won and very fertile lands are making in the affairs of the world. For the first time in human history a highly skilled people have suddenly come into possession of a vast and fertile area which stands ready for tillage without the labor which is necessary to prepare forest land for the plow. They are thus able to flood the grain markets of the world with food derived from lands which represent no other labor beyond tillage except that involved in constructing railways for the exportation of their products. This enables the people of the western plains to compete with countries where the land represents a great expenditure of labor in overcoming the natural barriers to the cultivation of the soil.

There are many lesser peculiarities connected with the soils of North America that have had considerable influence upon the history of the people; the most essential fact is, however, that the climatic conditions of this continent are such that all the important European products, except the olive, will flourish over a wide part of its surface. So that the peoples who come to it from any part of Europe find a climate not essentially different from their own, where the plants and animals on

which their civilization rested will flourish as well as in their own home.[1]

We may note also that the climate of North America brought Europeans in contact with no new diseases. North of the Gulf of Mexico the maladies of man were not increased by the transportation from Europe. It is difficult to arrive at a satisfactory determination concerning the effect of American conditions upon the peoples who have come from Europe to live a life of many generations upon its soil. Much has been said in a desultory way upon this subject, but little that has any very clear scientific value. The problem is a very complicated one. In the first place, it is very difficult, if not impossible, to separate the effects of climate from those brought about by a diversity of the social conditions, such as habits of labor, of food, etc. Moreover, the problem is further complicated by the fact that there has been a constant influx of folk into America from various parts of Europe, so that in most parts of the country there has been a constant admixture of the old blood and the new.

After reviewing the sources of information, I am convinced that the following facts may be regarded as established: the American people are no smaller in size than are the peoples in Europe from which they are derived; they are at least as long-lived; their capacity to withstand wounds, fatigue, etc., is at least as great as that of any European people; the average of physical beauty is probably quite as good as it is among an equal population in the Old World; the fecundity of the people

[1] It is an interesting fact that while America has given but one domesticated animal to Europe, in the turkey, it has furnished a number of the most important vegetables, among them maize, tobacco, and the potato. The absence of strong domesticable animals in America doubtless affected the development of civilization among its indigenous people. The buffalo is apparently not domesticable. The horse, which seems to have been developed on North American soil, and to have spread thence to Europe and Asia, seems to have disappeared in America before the coming of man to its shores. The only beast which could profitably be subjugated was the weak vicuna, which could only be used for carrying light burdens. But for the help given them by the sheep, the bull, and the horse, we may well doubt if the Old-World races would have won their way much more effectively than those of America had done.

is not diminished. The compass of this essay will not permit me to enter into the details necessary to defend these propositions as they might be defended. I will, however, show certain facts which seem to support them. First, as regards the physical proportions of the American people. By far the largest collections of accurate measurements that have ever been made of men were made by the officers of the United States Sanitary Commission during the late Civil War. These statistics have been carefully tabulated by Dr. B. A. Gould, the distinguished astronomer. From the results reached by him it is plain that the average dimensions of these troops were as good as those of any European army; while the men from those states where the population had been longest separated from the mother country were, on the whole, the best formed of all.

The statistics of the life-insurance companies make it clear that the death rate is not higher in America among the classes that insure than in England. I am credibly informed that American companies expect a longer life among their clients than the English tables of mortality assume.

The endurance of fatigue and wounds in armies has been proved by our Civil War to be as good as that of the best English or Continental troops. Such forced marches as that of Buell to the relief of the overwhelmed troops at Pittsburg Landing, or Shiloh, — where the men marched thirty-five miles without rest, and at once entered upon a contest which checked a victorious army, — is proof enough of the physical and moral endurance of the people. The extraordinary percentage of seriously wounded men that recovered during the war, — a proportion without parallel in European armies, — can only be attributed to the innate vigor of the men, and not to any superiority in the treatment they received. The distinguished physiologist, Dr. Brown-Sequard, assures me that the American body, be it that of man or beast, is more enduring of wounds than the European; that to make a given impression upon the body of a creature in America it is necessary to inflict severer wounds than it would be to produce the same effect on a creature of the same species in Europe. His opportunities for

forming an opinion on this subject have been singularly great, so that the assertion seems to me very important. That the fecundity of the population is not, on the whole, diminishing, is sufficiently shown by the statistics of the country. In the matter of physical beauty, the condition of the American people cannot, of course, be made a matter of statistics. The testimony of all intelligent travelers is to the effect that the forms of the people have lost nothing of their distinguished inheritance of beauty from their ancestors. The face is certainly no less intellectual in its type than that of the Teutonic peoples of the Old World, while the body is, though perhaps of a less massive mold, without evident marks of less symmetry.

* * * * * * * *

I next propose to consider the especial physical features of the continent in reference to the several settlements that were made upon it, the extent to which the geography and the local conditions of soil, climate, etc., have affected the fate of the several colonies planted on the eastern shore of North America north of Mexico.

Chance rather than choice determined the position of the several colonies that were planted on the American soil. So little was known of the natural conditions of the continent, or even of its shore geography, and the little that had been discovered was so unknown to navigators in general, that it was not possible to exercise much discretion in the placing of the first settlers in the New World. It happened that in this lottery the central parts of the American continent fell to the English people; while the French, by one chance and another, came into possession of two parts of the coast separated by over two thousand miles of shore. It will be plain from the map that these two positions were essentially the keys to the continent. The access to the interior of the continent by natural waterways is by two lines, — on the north by the St. Lawrence system of lakes and rivers; on the south by the Mississippi system of rivers, which practically connects with the St. Lawrence system. Fortune, in giving France the control of these two great avenues, offered her the mastery of the whole of its

vast domain. We have only to consider the part that the pathway of the Rhine played in the history of mediæval trade in Europe, to understand how valuable these lines would have been until railways and canals had come to compete with waterways.

* * * * * * * *

Throughout their efforts in North America the French showed a capacity for understanding the large questions of political geography, a genius for exploration, and a talent for making use of its results, or guiding their way to dominion, that is in singular contrast with the blundering processes of their English rivals. They seem to have understood the possibilities of the Mississippi valley a century and a half before the English began to understand them. They planted a system of posts and laid out lines for commerce through this region; they strove to organize the natives into civilized communities; they did all that the conditions permitted to achieve success. Their failure must be attributed to the want of colonists, to the essential irreclaimableness of the American savage, and to the want of a basis for an extended commerce in this country. There were no precious metals to tempt men into this wilderness, and none of the fancy for life or for lands among the home people, — that wandering instinct which has been the basis of all the imperial power of the English race. Thus a most cleverly devised scheme of continental occupation, which was admirably well adapted to the physical conditions of the country, never came near to success. It fell beneath the clumsy power of another race that had the capacity for fixing itself firmly in new lands, and that grew without distinct plan until it came to possess them altogether.

The British settlements on the American coast were not very well placed for other than the immediate needs that led to their planting. They did not hold any one of the three waterways which led from the coast into the interior of the continent, as we have seen the French obtained the control of the St. Lawrence and the Mississippi, and, as is well known, the Dutch possession of the Hudson, which constituted the

third and least complete of the waterways into the interior of the continent.

As regards their physical conditions, the original English colonies are divisible into three groups, — those of New England; those of the Chesapeake and Delaware district, including Pennsylvania, Virginia, Maryland, New Jersey, and the central part of North Carolina; and those on the coast region of the Carolinas. Each of these regions has its proper physical characters, which have had special effects upon their early history. In New England we have a shore line that affords an excellent system of harbors for craft of all sizes, and a sea that abounds in fish. The land has a rugged surface made up of old mountain folds, which have been worn down to their roots by the sea and by the glaciers of many ice periods. There are no extended plains, and where small patches of level land occur, as along the sea, there they are mostly of a rather barren and sandy character. The remainder of the surface is very irregular, and nearly one half of it is either too steep for tillage or consists of exposed rocks. The soil is generally of clay, and was originally covered almost everywhere with closely sown bowlders that had to be removed before the plow could do its work. The rivers are mostly small, and from their numerous rapids not navigable to any great distance from the sea, and none of their valleys afford natural ways into the interior of the continent. In general structure this region is an isolated mass separated from the body of the continent by the high ridges of the Green mountains and the Berkshire hills, as well as by the deep valley in which lie the Hudson and Lake Champlain. The climate is rigorous, only less so than that of Canada. There are not more than seven months for agricultural labor.

The New England district, including therein what we may term the Acadian peninsula of North America, or all east of Lake Champlain and the Hudson and south of the St. Lawrence, is more like northern Europe than any other part of America.

Nature does not give with free hands in this region, yet it offered some advantages to the early settlers. The general stubbornness of the soil made the coast Indians few in number,

while its isolation secured it from the more powerful tribes of the West. The swift rivers afforded abundant water power, that was early turned to use, and in time became the most valuable possession that the land afforded. The climate, though strenuous, was not unwholesome, and its severity gave protection against the malarial fevers which have so hindered the growth of settlements in more southern regions. Maize and pumpkins could be raised over a large part of its surface, and afforded cheap and wholesome food with little labor. The rate of gain upon the primeval forest was at first very slow; none of the products of the soil, except in a few instances its timber, had at first any value for exportation. The only surplusage was found in the products of the sea. In time the demand for food from the West Indian islands made it somewhat profitable to export grain. Practically, however, these colonies grew without important help from any foreign commerce awakened by the products of their soil. Their considerable foreign trade grew finally upon exchanges, or on the products of the sea fisheries and whaling. Even the trade in furs, which was so important a feature in the French possessions, never amounted to an important commerce in New England. The aborigines were not so generally engaged in hunting, nor were the rivers of New England ever very rich in valuable fur-bearing species. The most we can say of New England is, that it offered a chance for a vigorous race to found in safety colonies that would get their power out of their own toil, with little help from fortune. It was very badly placed for the occupancy of a people who were to use it as a vantage ground whence to secure control over the inner parts of the continent. But for the modern improvement in commercial ways, the isolation of this section from the other parts of the continent would have kept it from ever attaining the importance in American life which now belongs to it.

The settlements that were made along the Hudson were, as regards their position, much better placed than were those of New England. The valley of this stream is, as is well known to geologists, a part of the great mountain trough separating

from the newer Alleghenian system on the west the old mountain system of the Appalachians, which, known by the separate names of the Green mountains, Berkshire hills, South mountains, Blue ridge, and Black mountains, stretches from the St. Lawrence to the northern part of Georgia. In the Hudson district the Appalachian or eastern wall of the valley is known as the Berkshire hills and the Green mountains, while the western or Alleghenian wall is formed by the Catskill mountains and their northern continuation in the Hilderburg hills. On the south the Appalachian wall falls away, allowing the stream a wide passage to the sea; on the northwestern side the Catskills decline, opening the wide passage through which flows the Mohawk out of the broad, fertile upland valley which it drains. It appears likely that the Mohawk valley for a while in recent geological times afforded a passage of the waters of lake Ontario to the channel of the Hudson. This will serve to show how easy the passage is between the Hudson valley and the heart of the continent. Save that it is not a waterway, this valley affords, through the valley of the Mohawk, the most perfect passage through the long line of the Alleghenies. Before this passage could have any importance to its first European owners, it fell into the hands of the English settlers. The fertility of this valley of the Hudson and Mohawk is far greater than that of New England. A larger portion of the land is arable, and it is generally more fertile than that of the region to the east. The underlying rock of the country is generally charged with lime, which assures a better soil for grain crops than those derived from the more argillaceous formations of New England. The Mohawk is, for its size, perhaps the most fertile valley in America. The climate of this district is on the whole more severe than that of New England, but the summer temperature admits the cultivation of all the crops of the Northern States.

Though from Holland, the original settlers of the Hudson valley were by race and motives so closely akin to the English settlers to the north and south of them that a perfect fusion has taken place. The Dutch language is dead save in the

mouths of a few aged people, and of their institutions nothing has remained.[1]

The most striking contrast between the physical conditions of the New York colony and those of New England is its relative isolation from the sea. Staten Island and Long Island are strictly maritime; the rest is almost continental in its relations.

South of New York the conditions of the colonists as regards agriculture were very different from what they were north of that point. To the north the soil is altogether the work of the glacial period. It is on this account stony, and hard to bring into cultivation, as before described; but when once rendered arable, it is very enduring, changing little with centuries of cropping. South of this point the soil is derived from the rocks which lie below it, save just along the sea and the streams. The decayed rock that happens to lie just beneath the surface produces a fertile or an infertile earth, varied in quality according as the rocks. On the whole it is less enduring than are the soils of New England, though it is much easier to bring it into an arable state. It also differs from glacial soil in the fact that there is an absolute dependence of the qualities it possesses upon the subjacent rock. When that changes, the soil at once undergoes a corresponding alteration. In certain regions it may be more fertile than any glacial soil ever is; again, its infertility may be extreme, as, for instance, when the underlying rocks are sandstones containing little organic matter.

In this southern belt this region near the shore is rather malarial. The soil there is sandy, and of a little enduring nature, and the drainage is generally bad. Next within this line we have the fringe of higher country which lies to the east of the Blue ridge. This consists of a series of rolling plains, generally elevated four or five hundred feet above the sea. Near the

[1] It is worth while to notice that this Dutch colony never had the energetic life of the English settlements, which may be in part attributed to the effort to fix the continental seigniorial relations upon the land. It failed here as it failed in Canada, but it kept both colonies without the breath of hopeful, eager life which better land laws gave to the English settlements. Nothing shows so well the perfect unfitness of all seigniorial land systems to the best development of a country as the entire failure which met all efforts to fix them in the American colonies.

Blue ridge it is changed into a rather hilly district, with several ranges of detached mountains upon its surface; to the east it gradually declines into the plain which borders the sea. Within the Blue ridge it has the steep walls of the old granite mountains, which, inconspicuous in New Jersey, increase in Pennsylvania to important hills, become low mountains of picturesque form in Virginia, and finally in North and South Carolina attain the highest elevation of any land in eastern North America. This mountain range widens as it increases in height, and the plains that border it on the east grow also in height and width as we go to the southward in Virginia. All this section is composed of granite and other ancient rocks, which by their decay afford a very good soil. Beyond the Blue ridge, and below its summits, are the Alleghenies. Between them is a broad mountain valley, known to geologists as the great Appalachian valley. This is an elevated irregular table-land, generally a thousand feet or more above the sea, and mostly underlaid by limestone, which by its decay affords a very fertile soil. This singular valley is traceable all the way from Lake Champlain to Georgia. The whole course of the Hudson lies within it. As all the mountains rise to the southward, this valley has its floor constantly farther and farther above the sea, until in southern Virginia much of its surface is about two thousand feet above that level. This southward increase of elevation secures it a somewhat similar climate throughout its whole length. This, the noblest valley in America, is a garden in fertility, and of exceeding beauty. Yet west of this valley the Alleghenies proper extend, a wide belt of mountains, far to the westward. Their surface is generally rugged, but not infertile; they, as well as the Blue ridge, are clad with thick forests to their very summits.

The shore of this, the distinctly southern part of the North American coast, is deeply indented by estuaries, which have been cut out principally by the tides. These deep sounds and bays, — the Delaware, Chesapeake, Pamlico, Albemarle, and others, — with their very many ramifications, constitute a distinctive feature in North America. Although these indentations

are probably not of glacial origin, except, perhaps, the Delaware, they much resemble the great fiords which the glaciers have produced along the shores of regions farther to the northward. By means of these deep and ramified bays all the country of Virginia and Maryland lying to the east of the Appalachians is easily accessible to ships of large size. This was a very advantageous feature in the development of the export trade of this country, as it enabled the planters to load their crops directly into the ships which conveyed them to Europe, and this spared the making of roads, — a difficult task in a new country. The principal advantage of this set of colonies lay in the fact that they were fitted to the cultivation of tobacco. The demand for this product laid the foundations of American commerce, and was full of good and evil consequences to this country. It undoubtedly gave the means whereby Virginia became strong enough to be, on the part of the South, the mainstay of the resistance of the colonies to the mother country. On the other hand, it made African slavery profitable, and so brought that formidable problem of a foreign and totally alien race to be for all time a trouble to this country. Although the cultivation of cotton gave the greatest extension to slavery, it is not responsible for its firm establishment on our soil. This was the peculiar work of tobacco.

The climate of this region is, perhaps, the best of the United States. The winters want the severity that characterizes them in the more northern states, and the considerable height of the most of the district relieves it of danger from fevers. I have elsewhere spoken of the evidences that this district has maintained the original energy of the race that founded its colonies.

The Carolinian colonies are somewhat differently conditioned from those of Virginia, and their history has been profoundly influenced by their physical circumstances. South of the James river the belt of low-lying ground near the seashore widens rapidly, until the nearest mountain ranges are one hundred and fifty miles or more from the shore. This shore belt is also much lower than it is north of the James ; a large part of its surface is below the level where the drainage is effective, and so is unfit

for tillage. Much of it is swamp. The rivers do not terminate in as deep and long bays, with steep clay banks for borders, as they do north of the James. They are generally swamp-bordered in their lower courses, and not very well suited for settlements.

The soil of these regions is generally rather infertile ; it is especially unfitted for the cultivation of grains except near the shore, where the swamps can often be converted into good rice fields. Maize can be tilled, but it, as well as wheat, barley, etc., gives not more than half the return that may be had from them in Virginia. Were it not for the cotton crop, the lowland South would have fared badly.

All the shore belt of country is unwholesome, being affected with pernicious fevers, which often cannot be endured by the whites, even after the longest acclimatization. The interior region, even when not much elevated above the sea, or away from the swamps, is a healthy country, and the district within sight of the Blue Ridge and the Black mountains is a very salubrious district. This region was, however, not at once accessible to the colonists of the Carolinian shore, and was not extensively settled for some time after the country was first inhabited, and then was largely occupied by the descendants of the Virginian colonists.

The history of this country has served to show that much of the lowlands near the shore is not well fitted for the use of European peoples ; they are likely to fall into the possession of the African folk, who do not suffer, but rather seem to prosper in the feverish lowlands. The interior districts beyond the swamp country are well suited to Europeans, and where the surface rises more than one thousand feet above the sea, as it does in western North and South Carolina, the climate is admirably well suited to the European race. It is probable that the English race has never been in a more favorable climate than these uplands afford.

This Carolinian section was originally settled by a far more diversified population than that which formed the colonies to the northward. This was especially the case in North Carolina. This colony was originally possessed by a land company, which

proposed to find its profit in a peculiar fashion. This company paid contractors so much a head for human beings put ashore in the colony. One distinguished trader in population, a certain Baron de Graffenreid, settled several thousand folk at and about New Berne, on the swampy shores of the eastern sounds. They were from a great variety of places, — a part from England, others from the banks of the Rhine, others again from Switzerland. There was a great mass of human driftwood in Europe at the close of the seventeenth century, the wreck of long-continued wars, so it was easy to bring immigrants by the shipload if they were paid for. But the material was unfit to be the foundation of a state. From this settlement of eastern North Carolina is descended the most unsatisfactory population in this country. The central and western parts of North Carolina had an admirable population that principally came to the state through Virginia; but this population about Pamlico and Albemarle sounds, though its descendants are numerous, perhaps not numerically much inferior to that which came from the Virginia settlements, is vastly inferior to it in all the essential qualities of the citizen. From the Virginia people have come a great number of men of national and some of world-wide reputation. It is not likely that any other population, averaging in numbers about five hundred thousand souls, has in a century furnished as many able men. On the other hand, this eastern North Carolina people has given no men of great fame to the history of the country, while a large part of the so-called "poor white" population of the South appears to be descended from the mongrel folk who were turned ashore on the eastern coast of North Carolina.

South Carolina was much more fortunate in its early settlers on its seaboard than the colony to the north. Its population was drawn from rather more varied sources than that of Virginia, New York, or New England, but it would be hard to say that its quality was inferior; despite the considerable admixture of Irish and French blood, it was essentially an English colony.

On the whole, although the quality of the climate would lead some to expect a lowering of the quality of the English race in

these southern colonies, it is not possible to trace any such effect in the people. Although the laboring classes of whites along the seaboard appear to occupy a physical level rather below that of the same class in Virginia and the more northern regions, they have great endurance, as was sufficiently proven by the fact that they made good soldiers during the recent Civil War. In the upland districts of these states, in western North and South Carolina, and especially in northern Georgia, the physical constitution of the people is, I believe, the best in this country. In the district north of Pennsylvania, the elevation of the mountains, or the table-lands which lie about them, is not profitable to the dwellers in these districts; each added height scarcely gives any additional healthfulness, and the additional cold is hurtful to most crops. In this southern region, however, the greater height and width of the Appalachian mountain system, including its elevated valleys, is a very great advantage to this region in all that concerns its fitness for the use of man. The climate of one half of the country south of the James and Ohio rivers and east of the Mississippi is purified and refreshed by the elevations of this noble mountain system. It is the opinion of all who have examined this country that it is extremely well fitted for all the uses of the race; an admirable climate much resembling that of the Apennines of Tuscany, a fertile soil admitting a wide diversity of products, and a great abundance of water power characterize all this upland district of the South.

A few words will suffice for all that concerns the mineral resources of the original colonies. At the outset of the colonization of America we hear a good deal about the search for gold; fortunately there was a very uniform failure in the first efforts to find this metal, so that it ceased to play a part in the history of these colonies. Very little effort to develop the mineral resources of this region was made during the colonial period. A little iron was worked in Rhode Island, New York, and Virginia, some search of a rather fruitless sort was made for copper ore in Connecticut, but of mining industry, properly so called, there was nothing until the Revolutionary War

stimulated the search for iron and lead ores. The discovery of the gold deposits in the Carolinas did not come about until after the close of the colonial period. These deposits were not sufficiently rich to excite an immigration of any moment to the fields where they occur.

Practically the mineral resources of what we may term the Appalachian settlements of North America never formed any part of the inducements which led immigrants to them. In this respect they differ widely from the other colonies which were planted in the Americas. The greater part of the Spanish and Portuguese settlements in America were made by gold hunters. The state of morals which led to these settlements was not favorable to the formation of communities characterized by high motives. There were doubtless other influences at work to lower the moral quality of the settlements in Mexico and South America, but the nature of the motives which brought the first settlers upon the ground and gave the tone to society is certainly not the least important of the influences which have affected the history of the American settlements.

To close this brief account of the physical conditions of the first European settlements in North America, we may say that the English colonies were peculiarly fortunate in those physical conditions upon which they fell. There is no area in either of the Americas, or for that matter in the world outside of Europe, where it would have been possible to plant English colonies that would have been found so suitable for the purpose ; climate, soil, contact with the sea, and a chance of dominion over the whole continent were given them by fortune. They had but the second choice in the division of the New World ; yet to the English fell the control of those regions which experience has shown to hold its real treasures. Fortune has repeatedly blessed this race ; but never has she bestowed richer gifts than in the chance that gave it the Appalachian district of America.

CHAPTER II

THE SIGNIFICANCE OF THE FRONTIER IN AMERICAN HISTORY[1]

In a bulletin of the Superintendent of the Census for 1890 appear these significant words: "Up to and including 1880 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line. In the discussion of its extent, its westward movement, etc., it cannot, therefore, any longer have a place in the census reports." This brief official statement marks the closing of a great historic movement. Up to our own day American history has been in a large degree the history of the colonization of the West. The existence of an area of free land, its continuous recession, and the advance of American settlement westward explain American development.

Behind institutions, behind constitutional forms and modifications, lie the vital forces that call these organs into life and shape them to meet changing conditions. The peculiarity of American institutions is the fact that they have been compelled to adapt themselves to the changes of an expanding people — to the changes involved in crossing a continent, in winning a wilderness, and in developing at each area of this progress out of the primitive economic and political conditions of the frontier into the complexity of city life. Said Calhoun in 1817, "We are great, and rapidly — I was about to say fearfully — growing!" So saying, he touched the distinguishing feature of American life. All people show development; the germ theory

[1] By Professor F. J. Turner. Extracts reprinted, by courtesy of the author and publisher, from the Fifth Yearbook of the National Herbart Society (University of Chicago Press, 1899). First edition printed in *Report of American Historical Association for 1893.*

of politics has been sufficiently emphasized. In the case of most nations, however, the development has occurred in a limited area; and if the nation has expanded, it has met other growing peoples whom it has conquered. But in the case of the United States we have a different phenomenon. Limiting our attention to the Atlantic coast, we have the familiar phenomenon of the evolution of institutions in a limited area, such as the rise of representative government; the differentiation of simple colonial governments into complex organs; the progress from primitive industrial society, without division of labor, up to manufacturing civilization. But we have in addition to this a recurrence of the process of evolution in each western area reached in the process of expansion. Thus American development has exhibited not merely advance along a single line, but a return to primitive conditions on a continually advancing frontier line, and a new development for that area. American social development has been continually beginning over again on the frontier. This perennial rebirth, this fluidity of American life, this expansion westward with its new opportunities, its continuous touch with the simplicity of primitive society, furnish the forces dominating American character. The true point of view in the history of this nation is not the Atlantic coast: it is the great West. Even the slavery struggle, which is made so exclusive an object of attention by some historians, occupies its important place in American history because of its relation to westward expansion.

In this advance, the frontier is the outer edge of the wave,—the meeting point between savagery and civilization. Much has been written about the frontier from the point of view of border warfare and the chase, but as a field for the serious study of the economist and the historian it has been neglected.

The American frontier is sharply distinguished from the European frontier,—a fortified boundary line running through dense populations. The most significant thing about the American frontier is, that it lies at the hither edge of free land. In the census reports it is treated as the margin of that settlement which has a density of two or more to the square mile.

The term is an elastic one, and for our purposes does not need sharp definition. We shall consider the whole frontier belt, including the Indian country and the outer margin of the "settled area" of the census reports. This paper will make no attempt to treat the subject exhaustively; its aim is simply to call attention to the frontier as a fertile field for investigation, and to suggest some of the problems which arise in connection with it.

In the settlement of America we have to observe how European life entered the continent, and how America modified and developed that life and reacted on Europe. Our early history is the history of European germs developing in an American environment. Too exclusive attention has been paid by institutional students to the Germanic origins, too little to the American factors. The frontier is the line of most rapid and effective Americanization. The wilderness masters the colonist. It finds him a European in dress, industries, tools, modes of travel, and thought. It takes him from the railroad car and puts him in the birch canoe. It strips off the garments of civilization and arrays him in the hunting shirt and moccasin. It puts him in the log cabin of the Cherokee and Iroquois and runs an Indian palisade around him. Before long he has gone to planting Indian corn and plowing with a sharp stick; he shouts the war cry and takes the scalp in orthodox Indian fashion. In short, at the frontier the environment is at first too strong for the man. He must accept the conditions which it furnishes, or perish, and so he fits himself into the Indian clearings and follows the Indian trails. Little by little he transforms the wilderness, but the outcome is not the old Europe, not simply the development of Germanic germs, any more than the first phenomenon was a case of reversion to the Germanic mark. The fact is, that here is a new product that is American. At first, the frontier was the Atlantic coast. It was the frontier of Europe in a very real sense. Moving westward, the frontier became more and more American. As successive terminal moraines result from successive glaciations, so each frontier leaves its traces behind it, and when it becomes a settled area the region

still partakes of the frontier characteristics. Thus the advance of the frontier has meant a steady movement away from the influence of Europe, a steady growth of independence on American lines. And to study this advance, the men who grew up under these conditions, and the political, economic, and social results of it, is to study the peculiarly American part of our history.

Let us then grasp the conception of American society steadily expanding into new areas. How important it becomes to watch the stages, the processes, and the results of this advance! The conception will be found to revolutionize our study of American history.

Stages of Frontier Advance

In the Report on Population of the United States of the Eleventh Census, Part I, the student will find a series of maps representing the advance of population at each census period since 1790. By a consideration of these maps in connection with a relief map of the United States, and with the Reconnoissance Map of the United States showing the distribution of the geologic system (Fourteenth Annual Report of the United States Geological Survey, plate ii), and with the Contour Map of the United States (in blue and brown only, without culture data, published by the United States Geological Survey), it will become plain that for an adequate comprehension of the course of American history, it is necessary to study the process by which the advancing flood of settlement flowed into the successive physiographic areas. We must observe also how these areas affected the life of the emigrants from the older sections and from Europe.

When one examines these census maps by the side of Major Powell's map showing the physiographic regions of the United States,[1] he comprehends the fact that there are American sections, neither defined by state lines, nor by the old divisions of New England, middle region, south, and west; he perceives that, in some respects, the map of the United States may be likened to the map of Europe; that the great physiographic

[1] Physiography of the United States, pp. 98–99.

provinces which have been won by civilization are economically and socially comparable to nations of the Old World. The study of the stages of frontier advance thus becomes the fascinating examination of the successive evolution of peculiar economic and social countries, or provinces, each with its own inheritance, its own contributions, and individuality.

Such a study of the moving frontier will show how, after the tide-water section was settled below the fall line[1] in the seventeenth century, a combined stream along the Great valley and up the southern rivers that drain into the Atlantic, filled in the Piedmont region. This process occupied the first half of the eighteenth century. In the same period, settlement was ascending the Connecticut and the Housatonic in New England, and the Mohawk in New York. These river valleys, walled by the mountains and enriched with fluvial soils, became the outlet for increasing population, and they directed the flow of settlement. Thus two rival currents of settlement were already started by the middle of the eighteenth century. New England's stream was almost pure native stock. The stream that followed the Great valley and occupied the Piedmont was dominantly Scotch-Irish and German.

In vain the king attempted to check this advance by his proclamation of 1763, forbidding settlements beyond the sources of the Atlantic rivers. Just before the Revolution settlement reached and followed the "Western Waters" (the streams that, rising near the sources of the Atlantic rivers, cut their way through the mountains to join the Ohio).[2] The limestone soils, so welcome to the farmer, were influential in determining this advance. The limestone belt that floors the northern part of the Great valley in Pennsylvania, Maryland, and Virginia had tempted settlers along its path and into the Piedmont. The limestone flooring of the Tennessee valley now attracted settlers to eastern Tennessee. Thence, by Cumberland gap, or down the

[1] See Powell, Physiography of the United States, pp. 73–74.

[2] On this movement see Roosevelt, Winning of the West; Winsor, Mississippi Basin; and Winsor, Westward Movement. See also accounts of travelers, as cited in *Report of American Historical Association for 1893*, p. 203, and in Channing and Hart, Guide to American History, pp. 78–86.

Ohio from the north, the flood poured into the limestone areas of Kentucky and Tennessee, known as the Blue Grass lands.

By the close of the Revolution settlement in Kentucky and Tennessee was almost coterminous with the limestone formations, as may be seen by comparing the map of the census of 1790 with the map showing the distribution of the geologic system of the United States. These outlying islands of settlement, separated by wilderness and mountains from the frontier border of the settled area of the coast, had important effects upon American diplomatic, military, and economic history. In the Revolutionary era the frontier communities beyond the mountains attempted to establish states of their own, on democratic lines.[1] The West as a self-conscious section began to evolve,[2] and the struggle for the navigation of the Mississippi accented this western individualism, and made doubtful the unity of America.

By diplomacy, and by Indian wars and cessions, gradually the way was opened for the spread of settlement into western New York, and into the country north of the Ohio. New England's Connecticut valley and Housatonic valley settlers, overflowing their confines, poured into central and western New York between 1788 and 1820, and New England also began to settle in Ohio. The Middle States and the South sent their current of settlement into the southern part of the Northwest,[3] while settlement followed the victories of Andrew Jackson into the Southwest after the War of 1812.

By the census of 1820 the settled area included Ohio, southern Indiana and Illinois, southeastern Missouri, and about one half of Louisiana. This settled area had surrounded Indian areas, and the management of these tribes became an object of political concern. The frontier region of the time lay along the

[1] See my paper on Western State-Making in the Revolutionary Era (*American Historical Review*, I, 70, 251); Alden, New Governments West of the Alleghanies before 1780 (*Bulletin of the University of Wisconsin*).

[2] Cf. *Atlantic Monthly*, September, 1896, LXXVIII, 289.

[3] *Atlantic Monthly*, April, 1897, LXXIX, 433 *et seq.*; Roosevelt, Winning of the West, Vol. IV; Thorpe, Constitutional History of the People of the United States; Dwight, Travels (1796–1815) [New Haven, 1821].

Great Lakes, where Astor's American Fur Company operated in the Indian trade,[1] and beyond the Mississippi, where Indian traders extended their activity even to the Rocky mountains; Florida also furnished frontier conditions. The Mississippi river region was the scene of typical frontier settlements.[2] The era of internal improvements and protective tariffs under the home-market idea opened. Its explanation is to be sought in the distribution of settlement.

The rising steam navigation[3] on western waters, the opening of the Erie canal, and the westward extension of cotton[4] culture added five frontier states to the Union in this period. Grund, writing in 1836, declares: "It appears then that the universal disposition of Americans to emigrate to the western wilderness, in order to enlarge their dominion over inanimate nature, is the actual result of an expansive power which is inherent in them, and which by continually agitating all classes of society is constantly throwing a large portion of the whole population on the extreme confines of the state, in order to gain space for its development. Hardly is a new state or territory formed before the same principle manifests itself again and gives rise to a further emigration; and so it is destined to go on until a physical barrier must finally obstruct its progress."[5]

[1] Turner, Character and Influence of the Indian Trade in Wisconsin (*Johns Hopkins University Studies*, Series ix), pp. 61 ff.

[2] Monette, History of the Mississippi Valley, Vol. II; Flint, Travels and Residence in Mississippi; Flint, Geography and History of the Western States; Abridgment of Debates of Congress, VII, 397, 398, 404; Holmes, Account of the United States; Kingdom, America and the British Colonies [London, 1820]; Grund, Americans, II, i, iii, vi (although writing in 1836, he treats of conditions that grew out of western advance from the era of 1820 to that time); Peck, Guide for Emigrants [Boston, 1831]; Darby, Emigrants' Guide to Western and Southwestern States and Territories; Dana, Geographical Sketches in the Western Country; Kinzie, Waubun; Keating, Narrative of Long's Expedition; Schoolcraft, Discovery of the Sources of the Mississippi River, Travels in the Central Portions of the Mississippi Valley, and Lead Mines of the Missouri; Hurlbut, Chicago Antiquities; McKenney, Tour to the Lakes; Thomas, Travels through the Western Country, etc. [Auburn, N.Y., 1819]. Cf. Turner, Rise of New West, Vols. V–VIII [New York, 1906].

[3] Darby, Emigrants' Guide, pp. 272 ff; Benton, Abridgment of Debates, VII, 397.

[4] Turner, Rise of New West, chap. iv.

[5] Grund, Americans, II, 8.

It was in the period between 1820 and 1850 that the forces were at work which differentiated the northwestern frontier and the southwestern frontier. In the Southwest the spread of cotton culture transformed the pioneer farmer into the great planter and slaveholder. In the Northwest, the New England and Middle State stream, followed by German immigration, took possession of the Great Lake basin, and the pioneer farmer type was continued. This section was united to New York by the Erie canal and by the later railroads. New Orleans ceased to be the outlet of the Northwest. Thus the physiographic province included in the glaciated area embracing the Great Lake basin and New England plateau was brought, by the flow of frontier settlement, into economic, political, and social unity. In the same period the physiographic province of the Gulf plains was settled and unified by extensions of the coastal south, under the temptations of the cotton lands. The struggle for Texas and the Mexican War were later sequences of this movement.

Prior to this, the Mississippi valley had possessed a considerable degree of social and political homogeneity. By the processes just mentioned, however, the sectional division of North and South was carried beyond the Alleghenies, and the western spirit gave to the political and economic antagonisms between the old North and South sections a new rancor and aggressiveness. Both were regions of action, and they furnished the radical leaders for their respective sections in the struggle that followed.

In the middle of this century the line indicated by the present eastern boundary of Indian Territory, Nebraska, and Kansas marked the frontier of the Indian country.[1] Minnesota and

[1] Peck, New Guide to the West, chap. iv [Cincinnati, 1848]; Parkman, Oregon Trail; Hall, The West [Cincinnati, 1848]; Pierce, Incidents of Western Travel; Murray, Travels in North America; Lloyd, Steamboat Directory [Cincinnati, 1856]; "Forty Days in a Western Hotel" (Chicago), in *Putnam's Magazine*, December, 1894; Mackay, The Western World, II, ii, iii; Meeker, Life in the West; Bogen, Germans in America [Boston, 1851]; Olmstead, Texas Journey; Greeley, Recollections of a Busy Life; Schouler, History of the United States, V, 261–267; Peyton, Over the Alleghanies and across the Prairies

Wisconsin still exhibited frontier conditions,[1] but the distinctive frontier of the period is found in California, where the gold discoveries had sent a sudden tide of adventurous miners, in Oregon, and in the settlements in Utah.[2] As the frontier had leaped over the Alleghenies, so now it skipped the Great plains and the Rocky mountains; and in the same way that the advance of the frontiersman beyond the Alleghenies had caused the rise of important questions of transportation and internal improvement, so now the settlers beyond the Rocky mountains needed means of communication with the East, and in the furnishing of these arose the settlement of the Great plains and the development of still another kind of frontier life. Railroads, fostered by land grants, sent an increasing tide of immigrants into the Far West. The United States army[3] fought a series of Indian wars in Minnesota, Dakota, and the Indian Territory; cessions made way for settlement.

By 1880 the settled area had been pushed into northern Michigan, Wisconsin, and Minnesota, along Dakota rivers, and in the Black hills region, and was ascending the rivers of Kansas and Nebraska.[4] The development of mines in Colorado had drawn isolated frontier settlements into that region, and Montana and Idaho were receiving settlers. The frontier was found in these mining camps and the ranches of the Great plains. The superintendent of the census for 1890 reports, as previously stated, that the settlements of the West lie so

[London, 1870]; Peyton, Suggestions on Railroad Communication with the Pacific and the Trade of China and the Indian Islands; Benton, Highway to the Pacific (a speech in the United States Senate, December 16, 1850). Cf. Chittenden, American Fur Trade.

[1] A writer in the *Home Missionary* [1850], p. 239, reporting Wisconsin conditions, exclaims: "Think of this, people of the enlightened East! What an example, to come from the very frontiers of civilization!" But one of the missionaries writes: "In a few years Wisconsin will no longer be considered as the West, or as an outpost of civilization, any more than western New York, or the Western Reserve."

[2] Bancroft (H. H.), History of the Pacific States; and Popular Tribunals; Hittell, California; Shinn, "Mining Camps"; Shinn, "Story of the Mine": *Century Magazine*, 1890, 1891.

[3] Rodenbough and Haskin, Army of the United States.

[4] See *Atlantic Monthly*, LXXIX, 440.

scattered over the region that there can no longer be said to be a frontier line.

It will be noted that the frontier boundaries are physiographically significant. The fall line marked the seventeenth-century frontier; the Allegheny mountains, that of the middle of the eighteenth century; the Mississippi, that of the last decade of the eighteenth century, and, in part, that of the first quarter of the present century. Settlement which had crept up the Missouri, the Platte, etc., by the middle of the nineteenth century stayed while the rush of gold seekers made a new frontier on the Pacific coast and in the Rocky mountains. The boundary of the arid region (roughly the hundredth meridian) marks the most recent frontier. The conquest of the arid West will be by different processes than that of the other areas of western advance, and a different social type may be looked for in the region.

Each great western advance, thus outlined, has been accompanied by a diplomatic or military struggle against rival nations, and by a series of Indian wars and cessions.

The Frontier furnishes a Field for Comparative Study of Social Development

At the Atlantic frontier one can study the germs of processes repeated at each successive frontier. We have the complex European life sharply precipitated by the wilderness into the simplicity of primitive conditions. The first frontier had to meet its Indian question, its question of the disposition of the public domain, of the means of intercourse with older settlements, of the extension of political organization, of religious and educational activity. And the settlement of these and similar questions for one frontier served as a guide for the next. The American student needs not to go to the "prim little townships of Sleswick" for illustrations of the law of continuity and development. For example, he may study the origin of our land policies in the colonial land policy; he may see how the system grew by adapting the statutes to the

customs of the successive frontiers.[1] He may see how the mining experience in the lead regions of Wisconsin, Illinois, and Iowa was applied to the mining laws of the Rockies,[2] and how our Indian policy has been a series of experimentations on successive frontiers. Each tier of new states has found in the older ones material for its constitution.[3] Each frontier has made similar contributions to American character, as will be discussed farther on.

But with all these similarities there are essential differences, due to the place element and the time element. It is evident that the farming frontier of the Mississippi valley presents different conditions from the mining frontier of the Rocky mountains. The frontier reached by the Pacific railroad, surveyed into rectangles, guarded by the United States army, and recruited by the daily immigrant ship, moves forward in a different way and at a swifter pace than the frontier reached by the birch canoe or the pack horse. The geologist traces patiently the shores of ancient seas, maps their areas, and compares the older and the newer. It would be a work worth the historian's labors to mark these various frontiers, and in detail compare one with another. Not only would there result a more adequate conception of American development and characteristics, but invaluable additions would be made to the history of society.

Loria,[4] the Italian economist, has urged the study of colonial life as an aid in understanding the stages of European development, affirming that colonial settlement is for economic science what the mountain is for geology, bringing to light primitive stratifications. "America," he says, "has the key to the historical enigma which Europe has sought for centuries in vain, and the land which has no history reveals luminously the course of universal history." There is much truth in this. The United States lies like a huge page in the history of society. Line by

[1] See the suggestive paper by Professor Jesse Macy, "The Institutional Beginnings of a Western State."

[2] Shinn, "Mining Camps."

[3] Cf. Thorpe, in *Annals of American Academy of Political and Social Science*, September, 1891; Bryce, American Commonwealth [1888], II, 689.

[4] Loria, Analisi della Proprietà Capitalista, II, 15.

line, as we read this continental page from west to east, we find the record of social evolution. It begins with the Indian and the hunter; it goes on to tell of the disintegration of savagery by the entrance of the trader, the pathfinder of civilization; we read the annals of the pastoral stage in ranch life; the exploitation of the soil by the raising of unrotated crops of corn and wheat in sparsely settled farming communities; the intensive culture of the denser farm settlement; and finally, the manufacturing organization with city and factory system.[1] This page is familiar to the student of census statistics, but how little of it has been used by our historians. Particularly in eastern states this page is a palimpsest. What is now a manufacturing state was in an earlier decade an area of intensive farming. Earlier yet it had been a wheat area, and still earlier the "range" had attracted the cattle herder. Thus Wisconsin, now developing manufacture, is a state with varied agricultural interests. But earlier it was given over to almost exclusive grain raising, like North Dakota at the present time.

Each of these areas has had an influence in our economic and political history; the evolution of each into a different industrial stage has worked political transformations.[2] Wisconsin, to take an illustration, in the days when it lacked varied agriculture and complex industrial life, was a stronghold of the granger and greenback movements; but it has undergone an industrial transformation, and in the presidential contest of 1896 Mr. Bryan carried but three counties in the state. Again consider the history of Calhoun. His father came with the tide of Scotch-Irish pioneers that built their log cabins in the Piedmont region of the Carolinas. The young manhood of Calhoun was thoroughly western in its nationalistic and loose-construction characteristics. But the extension of cotton culture to the Piedmont, following the industrial revolution in

[1] Cf. Observations on the N. A. Land Company, pp. 15, 144 [London, 1796]; Logan, History of Upper S. C., I, 149–151; Turner, Indian Trade in Wisconsin, p. 18; Peck, New Guide for Emigrants, chap. iv [Boston, 1837]; Compendium, Eleventh Census, xl.

[2] Turner, Introduction to Libby's Ratification of the American Constitution [*Bull. of Univ. of Wis.*, Econ., Pol. Sci., and Hist. Series, Vol. I].

England, superseded the pioneer by the slave-holding planter. Calhoun's ideas changed with his section, until he became the chief prophet of southern sectionalism and slavery.[1]

Among isolated coves in the Appalachian mountains, and in other out-of-the-way places, the frontier has survived, like a fossil, in a more recent social formation. The primitive economic conditions of these mountains of Tennessee, or of Georgia, for instance, enable us to comprehend some of the characteristics of the frontier of earlier days. In the *American Journal of Sociology* for July, 1898, under the title "A Retarded Frontier," Professor Vincent has described such a community.

The Atlantic frontier was compounded of fisherman, fur trader, miner, cattle raiser, and farmer. Excepting the fisherman, each type of industry was on the march toward the west, drawn by an irresistible attraction. Each passed in successive waves across the continent. Stand at Cumberland gap and watch the procession of civilization, marching single file — the buffalo following the trail to the salt springs, the Indian, the fur trader and hunter, the cattle raiser, the pioneer farmer — and the frontier has passed by. Stand at South pass in the Rockies a century later and see the same procession with wider intervals between. The unequal rate of advance compels us to distinguish the frontier into the trader's frontier, the rancher's frontier, or the miner's frontier, and the farmer's frontier. When the mines and the cow pens were still near the fall line the trader's pack trains were tinkling across the Alleghenies, and the French on the Great Lakes were fortifying their posts, alarmed by the British trader's birch canoe. When the trappers scaled the Rockies the farmer was still near the mouth of the Missouri.

The Indian Trader's Frontier

Why was it that the Indian trader passed so rapidly across the continent? What effects followed from the trader's frontier? The trade was coeval with American discovery. The Norsemen, Vespuccius, Verrazani, Hudson, John Smith, all trafficked for

[1] Turner, Rise of New West, for other illustrations, and cf. *Atlantic Monthly*, April, 1897, LXXIX, 441–443.

furs. The Plymouth pilgrims settled in Indian cornfields, and their first return cargo was of beaver and lumber. The records of the various New England colonies show how steadily exploration was carried into the wilderness by this trade. What is true for New England is, as would be expected, even plainer for the rest of the colonies. All along the coast from Maine to Georgia the Indian trade opened up the river courses. Steadily the trader passed westward, utilizing the older lines of French trade. The Ohio, the Great Lakes, the Mississippi, the Missouri, and the Platte, the lines of western advance, were ascended by traders. They found the passes in the Rocky mountains and guided Lewis and Clark,[1] Frémont, and Bidwell. The explanation of the rapidity of this advance is connected with the effects of the trader on the Indian. The trading post left the unarmed tribes at the mercy of those that had purchased firearms, — a truth which the Iroquois Indians wrote in blood, and so the remote and unvisited tribes gave eager welcome to the trader. "The savages," wrote La Salle, "take better care of us French than of their own children; from us only can they get guns and goods." This accounts for the trader's power and the rapidity of his advance. Thus the disintegrating forces of civilization entered the wilderness. Every river valley and Indian trail became a fissure in Indian society, and so that society became honeycombed. Long before the pioneer farmer appeared on the scene, primitive Indian life had passed away. The farmers met Indians armed with guns. The trading frontier, while steadily undermining Indian power by making the tribes ultimately dependent on the whites, yet, through its sale of guns, gave to the Indians increased power of resistance to the farming frontier. French colonization was dominated by its trading frontier, English colonization by its farming frontier. There was an antagonism between the two frontiers as between the two nations. Said Duquesne to the Iroquois: "Are you ignorant of the difference between the king of England and the king of France? Go see the forts

[1] But Lewis and Clark were the first to explore the route from the Missouri to the Columbia.

that our king has established and you will see that you can still hunt under their very walls. They have been placed for your advantage in places which you frequent. The English, on the contrary, are no sooner in possession of a place than the game is driven away. The forest falls before them as they advance, and the soil is laid bare so that you can scarce find the wherewithal to erect a shelter for the night."

And yet, in spite of this opposition of the interests of the trader and the farmer, the Indian trade pioneered the way for civilization. The buffalo trail became the Indian trail, and this became the trader's "trace"; the trails widened into roads, and the roads into turnpikes, and these in turn were transformed into railroads. The same origin can be shown for important railroads of the South, the Far West, and the Dominion of Canada.[1] The trading posts reached by these trails were on the sites of Indian villages which had been placed in positions suggested by nature; and these trading posts, situated so as to command the water systems of the country, have grown into such cities as Albany, Pittsburg, Detroit, Chicago, St. Louis, Council Bluffs, and Kansas City. Thus civilization in America has followed the arteries made by geology, pouring an ever richer tide through them, until at last the slender paths of aboriginal intercourse have been broadened and interwoven into the complex mazes of modern commercial lines; the wilderness has been interpenetrated by lines of civilization growing ever more numerous. It is like the steady growth of a complex nervous system for the originally simple, inert continent. If one would understand why we are to-day one nation rather than a collection of isolated states, he must study this economic and social consolidation of the country. In this progress from savage conditions lie topics for the evolutionist.[2]

[1] The later railroads frequently deviated in important respects from the exact line of the old trails; but the statement is true in general. See Narrative and Critical History of America, VIII, 10; Sparks, Washington's Works, IX, 303, 327; Logan, History of Upper South Carolina, Vol. I; McDonald, Life of Kenton, p. 72.

[2] On the effect of the fur trade in opening the routes of migration, see the author's Character and Influence of the Indian Trade in Wisconsin.

The effect of the Indian frontier as a consolidating agent in our history is important. From the close of the seventeenth century various intercolonial congresses have been called to treat with Indians and establish common measures of defense. Particularism was strongest in colonies with no Indian frontier. This frontier stretched along the western border like a cord of union. The Indian was a common danger, demanding united action. Most celebrated of these conferences was the Albany congress of 1754, called to treat with the Six Nations, and to consider plans of union. Even a cursory reading of the plan proposed by the congress reveals the importance of the frontier. The powers of the general council and the officers were, chiefly, the determination of peace and war with the Indians, the regulation of Indian trade, the purchase of Indian lands, and the creation and government of new settlements as a security against the Indians. It is evident that the unifying tendencies of the Revolutionary period were facilitated by the previous coöperation in the regulation of the frontier. In this connection may be mentioned the importance of the Indian frontier in the modification of western institutions and character, and particularly, as a military training school, keeping alive the power of resistance to aggression, and developing the stalwart and rugged qualities of the frontiersman. If the reader will compare the names of the officers whose exploits at Santiago and at Manila are now in everybody's mouth, with the names of the officers in the Indian fighting of the United States, he will understand better the importance of this aspect of the frontier.[1]

The Rancher's Frontier

It would not be possible in the limits of this paper to trace the other frontiers across the continent. At the close of the seventeenth century in Virginia we find vast droves of wild

[1] Colonel Leonard Wood, for example, in the Geronimo campaign under Lawton in 1886, added to his duties as surgeon the command of the infantry. Cf. *Century Magazine*, July, 1891, p. 369, and *Scribner's Magazine*, January, 1899, pp. 3–20.

horses and cattle, with typical ranch life and customs. Similar conditions existed in other parts of the coast area.[1] Travelers of the eighteenth century found the "cow pens" among the canebrakes and pea-vine pastures of the South, and the "cow drivers" took their droves to Charleston, Philadelphia, and New York.[2] Travelers at the close of the War of 1812 met droves of more than a thousand cattle and swine from the interior of Ohio going to Pennsylvania to fatten for the Philadelphia market.[3] The ranges of the Great plains, with ranch and cowboy and nomadic life, are things of yesterday and of to-day.[4] The experience of the Carolina cow pens guided the ranchers of Texas. One element favoring the rapid extension of the rancher's frontier is the fact that in a remote country lacking transportation facilities the product must be in small bulk, or must be able to transport itself, and the cattle raiser could easily drive his product to market. The effect of these great ranches on the subsequent agrarian history of the localities in which they existed should be studied.

The Farmer's Frontier

The maps of the census reports show an uneven advance of the farmer's frontier, with tongues of settlement pushed forward and with indentations of wilderness. In part this is due to Indian resistance, in part to the location of river valleys and passes, in part to the unequal force of the centers of frontier attraction. Among the important centers of attraction may be mentioned the following: fertile and favorably situated soils, salt springs, mines, and army posts.

[1] Cf. Bruce, Economic History of Virginia in the Seventeenth Century, I, 473–477, 540; Weeden, Economic and Social History of New England, I, 100, 128; Doyle, Puritan Colonies, II, 19–23, 46–47.

[2] Lodge, English Colonies, p. 152 and citations; Logan, History of Upper South Carolina, I, 151.

[3] Flint, Recollections, p. 9.

[4] See Wister, "Evolution of the Cow Puncher," in *Harper's Magazine*, September, 1895; Hough, Story of the Cow Boy; Roosevelt, Ranch Life and the Hunting Trail.

Army Posts

The frontier army post, serving to protect the settlers from the Indians, has also acted as a wedge to open the Indian country, and has been a nucleus for settlement.[1] In this connection mention should also be made of the government military and exploring expeditions in determining the lines of settlement. But all the more important expeditions were greatly indebted to the earliest pathmakers, the Indian guides, the traders and trappers, and the French voyageurs, who were inevitable parts of governmental expeditions from the days of Lewis and Clark. Each expedition was an epitome of the previous factors in western advance.

Salt Springs

In an interesting monograph, Victor Hehn[2] has traced the effect of salt upon early European development, and has pointed out how it affected the lines of settlement and the form of administration. A similar study might be made for the salt springs of the United States. The early settlers were tied to the coast by the need of salt, without which they could not preserve their meats or live in comfort. Writing in 1752, Bishop Spangenburg says of a colony for which he was seeking lands in North Carolina: "They will require salt & other necessaries which they can neither manufacture nor raise. Either they must go to Charleston, which is 300 miles distant. . . . Or else they must go to Boling's Point in V^{a} on a branch of the James & is also 300 miles from here . . . Or else they must go down the Roanoke — I know not how many miles — where salt is brought up from the Cape Fear."[3] This may serve as a typical illustration. An annual pilgrimage to the coast for salt thus became essential. Taking flocks or furs and ginseng root, the early settlers sent their pack trains after seeding time

[1] Cf. Hening's Statutes, II, 433, 448; III, 204; Benton's View, I, 102; II, 70, 167; Monette, Mississippi Valley, I, 344.

[2] Hehn, Das Salz [Berlin, 1873].

[3] Colonial Records of North Carolina, V, 3.

each year to the coast.[1] This proved to be an important educational influence, since it was almost the only way in which the pioneer learned what was going on in the East. But when discovery was made of the salt springs of the Kanawha, and the Holston, and Kentucky,[2] and central New York, the West began to be freed from dependence on the coast. It was in part the effect of finding these salt springs that enabled settlement to cross the mountains.

Land

The exploitation of the beasts took hunter and trader to the West, the exploitation of the grasses took the rancher West, and the exploitation of the virgin soil of the river valleys and prairies attracted the farmer. Good soils have been the most continuous attraction to the farmer's frontier. When the science of physiography is more completely related to the study of our history it will be seen how dependent that history was upon the forces that carved out the limestone valleys and deposited alluvial soils along the river courses. The land hunger of the Virginians drew them down the rivers into Carolina, in early colonial days ; the pursuit of good soil took the Massachusetts men to Pennsylvania and to New York. As the eastern lands were taken up migration flowed across them to the West. Daniel Boone, the great backwoodsman, who combined the occupations of hunter, trader, cattle raiser, farmer, and surveyor — learning, probably from the traders, of the fertility of the lands on the upper Yadkin, where the traders were wont to rest as they took their way to the Indians — left his Pennsylvania home with his father, and passed down the Great Valley road to that stream. Learning from a trader whose posts were on the Red river in Kentucky of its game and rich pastures, he pioneered the way for the farmers to that region. Thence he passed to the frontier of Missouri, where his settlement was long a landmark on the frontier. Here again he

[1] Findley, History of the Insurrection in the Four Western Counties of Pennsylvania in the Year 1794, p. 35 [Philadelphia, 1796].

[2] See also McGee's paper on potable springs, as affecting settlement, in the Fourteenth Annual Report of the United States Geological Survey, Part II, p. 9.

helped to open the way for civilization, finding salt licks and trails and land. His son was among the earliest trappers in the passes of the Rocky mountains, and his party is said to have been the first to camp on the present site of Denver. His grandson, Colonel A. J. Boone of Colorado, was a power among the Indians of the Rocky mountains, and was appointed an agent by the government. Kit Carson's mother was a Boone.[1] Thus this family epitomizes the backwoodsman's advance across the continent.

The farmer's advance came in a distinct series of waves. In Peck's "New Guide to the West," published in Boston in 1837, occurs this suggestive passage:

Generally, in all the western settlements, three classes, like the waves of the ocean, have rolled one after the other. First comes the pioneer, who depends for the subsistence of his family chiefly upon the natural growth of vegetation, called the "range," and the proceeds of hunting. His implements of agriculture are rude, chiefly of his own make, and his efforts directed mainly to a crop of corn and a "truck patch." The last is a rude garden for growing cabbage, beans, corn for roasting ears, cucumbers, and potatoes. A log cabin, and, occasionally, a stable and corncrib, and a field of a dozen acres, the timber girdled or "deadened," and fenced, are enough for his occupancy. It is quite immaterial whether he ever becomes the owner of the soil. He is the occupant for the time being, pays no rent, and feels as independent as the "lord of the manor." With a horse, cow, and one or two breeders of swine, he strikes into the woods with his family, and becomes the founder of a new country, or perhaps state. He builds his cabin, gathers around him a few other families of similar tastes and habits, and occupies until the range is somewhat subdued, and hunting a little precarious, or, which is more frequently the case, till the neighbors crowd around, roads, bridges, and fields annoy him, and he lacks elbow room. The preëmption law enables him to dispose of his cabin and cornfield to the next class of emigrants; and, to employ his own figures, he "breaks for the high timber," "clears out for the New Purchase," or migrates to Arkansas or Texas, to work the same process over.

The next class of emigrants purchase the lands, add field to field, clear out the roads, throw rough bridges over the streams, put up hewn log houses with glass windows and brick or stone chimneys, occasionally plant orchards, build mills, schoolhouses, etc., and exhibit the picture and forms of plain, frugal, civilized life.

Another wave rolls on. The men of capital and enterprise come. The settler is ready to sell out and take the advantage of the rise in property,

[1] Hale, Daniel Boone (pamphlet).

push farther into the interior, and become, himself, a man of capital and enterprise in turn. The small village rises to a spacious town or city; substantial edifices of brick, extensive fields, orchards, gardens, colleges, and churches are seen. Broadcloths, silks, leghorns, crapes, and all the refinements, luxuries, elegancies, frivolities, and fashions are in vogue. Thus wave after wave is rolling westward; the real Eldorado is still further on.

A portion of the two first classes remain stationary amidst the general movement, improve their habits and condition, and rise in the scale of society.

The writer has traveled much amongst the first class, the real pioneers. He has lived many years in connection with second grade; and now the third wave is sweeping over large districts of Indiana, Illinois, and Missouri. Migration has become almost a habit in the West. Hundreds of men can be found, not over fifty years of age, who have settled for the fourth, fifth, or sixth time on a new spot. To sell out and remove only a few hundred miles makes up a portion of the variety of backwoods life and manners.[1]

Omitting those of the pioneer farmers who move from the love of adventure, the advance of the more steady farmer is easy to understand. Obviously the immigrant was attracted by the cheap lands of the frontier, and even the native farmer felt their influence strongly. Year by year the farmers who lived on soil whose returns were diminished by unrotated crops were offered the virgin soil of the frontier at nominal prices. Their growing families demanded more lands, and these were dear. The competition of the unexhausted, cheap, and easily tilled prairie lands compelled the farmer either to go West and continue the exhaustion of the soil on a new frontier, or to adopt intensive culture. Thus the census of 1890 shows, in the Northwest, many counties in which there is an absolute or a relative decrease of population. These states have been sending farmers to advance the frontier on the plains, and have themselves begun to turn to intensive farming and to manufacture. A decade before this, Ohio had shown the same transition stage. The

[1] Cf. Baily, Tour in the Unsettled Parts of North America, pp. 217–219 [London, 1856], where a similar analysis is made for 1796. See also Collot, Journey in North America, p. 109 [Paris, 1826]; Observations on the North American Land Company, pp. xv, 144 [London, 1796]; Logan, History of Upper South Carolina; Murat, Moral and Political Sketch of the United States [London, 1833] (also under the title America and Americans [New York, 1849]); Dwight, Travels, II, 459; IV, 32; Roosevelt, Winning of the West, III, v.

demand for land and the love of wilderness freedom drew the frontier ever onward. The sectional aspects of the agricultural frontier demand historical study. The United States Department of Agriculture has published two bulletins (Nos. 10 and 11, of the Division of Biological Survey), which give maps showing the *Life Zones and Crop Zones of the United States*, and the *Geographic Distribution of Cereals in North America*. The census volume on agriculture contains other maps showing the distribution of various crops and products. As the farmer's frontier advanced westward it reached and traversed these natural physiographic areas. The history of the farmer's frontier is in part a history of the struggle between these natural conditions and the custom of the farmer to raise the crops and use the methods of the other regions which he has left. The tragedy of the occupation of the arid tract, where the optimism of the pioneer farmer met its first rude rebuff by nature itself, is a case in point.

Having now roughly outlined the various kinds of frontiers, and their modes of advance, chiefly from the point of view of the frontier itself, we next inquire what were the influences on the East and on the Old World. A rapid enumeration of some of the more noteworthy effects is all that I have space for.

Composite Nationality

First, we note that the frontier promoted the formation of a composite nationality for the American people. The coast was preponderantly English, but the later tides of continental immigration flowed across to the free lands. This was the case from the early colonial days. The Scotch-Irish and the Palatine-Germans, or "Pennsylvania Dutch," furnished the dominant element in the stock of the colonial frontier. With these peoples were also the freed indented servants, or redemptioners, who, at the expiration of their time of service, passed to the frontier. Governor Spotswood, of Virginia, writes, in 1717, "The inhabitants of our frontiers are composed generally of such as have been transported hither as servants, and, being out of their time,

settle themselves where land is to be taken up and that will produce the necessarys of life with little labour."[1] Very generally these redemptioners were of non-English stock. In the crucible of the frontier the immigrants were Americanized, liberated, and fused into a mixed race, English in neither nationality nor characteristics. The process has gone on from the early days to our own. Burke and other writers in the middle of the eighteenth century believed that Pennsylvania[2] was "threatened with the danger of being wholly foreign in language, manners, and perhaps even inclinations." The German and Scotch-Irish elements in the frontier of the South were only less great. In the middle of the present century the German element in Wisconsin was already so considerable that leading publicists looked to the creation of a German state out of the commonwealth by concentrating their colonization.[3] By the census of 1890 South Dakota had a percentage of persons of foreign parentage to total population of sixty; Wisconsin, seventy-three; Minnesota, seventy-five; and North Dakota, seventy-nine. Such examples teach us to beware of misinterpreting the fact that there is a common English speech in America into a belief that the stock is also English.

Industrial Independence

In another way the advance of the frontier decreased our dependence on England. The coast, particularly of the South, lacked diversified industries, and was dependent on England for the bulk of its supplies. In the South there was even a dependence on the northern colonies for articles of food. Governor Glenn, of South Carolina, writes in the middle of the eighteenth century: "Our trade with New York and Philadelphia was of this sort, draining us of all the little money and bills we could gather from other places for their bread, flour, beer, hams, bacon, and other things of their produce, all which, except beer, our

[1] Spotswood Papers, in *Collections of Virginia Historical Society*, Vols. I, II.
[2] Burke, European Settlements, etc. [1765 ed.], II, 200.
[3] Everest, in *Wisconsin Historical Collections*, XII, 7 ff.

new townships began to supply us with, which are settled with very industrious and thriving Germans. This no doubt diminishes the number of shipping and the appearance of our trade, but it is far from being a detriment to us."[1] Before long the frontier created a demand for merchants. As it retreated from the coast it became less and less possible for England to bring her supplies directly to the consumers' wharfs, and carry away staple crops, and staple crops began to give way to diversified agriculture for a time. The effect of this phase of the frontier action upon the northern section is perceived when we realize how the advance of the frontier aroused seaboard cities like Boston, New York, and Baltimore, to engage in rivalry for what Washington called "the extensive and valuable trade of a rising empire."

Effects on National Legislation

The legislation which most developed the powers of the national government, and played the largest part in its activity, was conditioned on the frontier. Writers have discussed the subjects of tariff, land, and internal improvement as subsidiary to the slavery question. But when American history comes to be rightly viewed it will be seen that the slavery question is an incident. In the period from the end of the first half of the present century to the close of the Civil War slavery rose to primary, but far from exclusive, importance. But this does not justify Dr. von Holst (to take an example) in treating our constitutional history in its formative period down to 1828 in a single volume, giving six volumes chiefly to the history of slavery from 1828 to 1861, under the title "Constitutional History of the United States." The growth of nationalism and the evolution of American political institutions were dependent on the advance of the frontier. Even so recent a writer as Rhodes, in his history of the United States since the compromise of 1850, has treated the legislation called out by the western advance as incidental to the slavery struggle.

[1] Weston, Documents connected with History of South Carolina, p. 61.

This is a wrong perspective. The pioneer needed the goods of the coast, and so the grand series of internal improvement and railroad legislation began, with potent nationalizing effects. Over internal improvements occurred great debates, in which grave constitutional questions were discussed. Sectional groupings appear in the votes, profoundly significant for the historian.[1] Loose construction increased as the nation marched westward.[2] But the West was not content with bringing the farm to the factory. Under the lead of Clay — "Harry of the West" — protective tariffs were passed, with the cry of bringing the factory to the farm. The disposition of the public lands was a third important subject of national legislation influenced by the frontier.

Effects on Institutions

It is hardly necessary to do more than mention the fact that the West was a field in which new political institutions were to be created. It offered a wide opportunity for speculative creation and for adjustment of old institutions to new conditions. The study of the evolution of western institutions shows how slight was the proportion of actual theoretic invention of institutions; but there is abundance of opportunity for study of the sources of the institutions actually chosen, the causes of the selection, the degree of transformation by the new conditions, and the new institutions actually produced by the new environment.

The Public Domain

The public domain has been a force of profound importance in the nationalization and development of the government. The effects of the struggle of the landed and the landless states, and

[1] Cf. Libby, "Plea for the Study of Votes in Congress," in *Report of American Historical Association for 1896*, p. 223; Turner, Rise of the New West, Introduction.

[2] See, for example, the speech of Clay, in the House of Representatives, January 30, 1824.

of the ordinance of 1787, need no discussion.[1] Administratively the frontier called out some of the highest and most vitalizing activities of the general government. The purchase of Louisiana was perhaps the constitutional turning point in the history of the republic, inasmuch as it afforded both a new area for national legislation and the occasion of the downfall of the policy of strict construction. But the purchase of Louisiana was called out by frontier needs and demands. As frontier states accrued to the Union the national power grew. In a speech on the dedication of the Calhoun monument, Mr. Lamar explained, "In 1789 the states were the creators of the federal government; in 1861 the federal government was the creator of a large majority of the states."

When we consider the public domain from the point of view of the sale and disposal of the public lands,[2] we are again brought face to face with the frontier. The policy of the United States in dealing with its lands is in sharp contrast with the European system of scientific administration. Efforts to make this domain a source of revenue, and to withhold it from emigrants in order that settlement might be compact, were in vain. The jealousy and the fears of the East were powerless in the face of the demands of the frontiersmen. John Quincy Adams was obliged to confess: "My own system of administration, which was to make the national domain the inexhaustible fund for progressive and unceasing internal improvement, has failed." The reason is obvious; a system of administration was not what the West demanded; it wanted land. Adams states the situation as follows: "The slaveholders of the South have bought the coöperation of the western country by the bribe of the western lands, abandoning to the new western states their own proportion of the public property and aiding them in the design of grasping all the lands into their own hands. Thomas H.

[1] See the admirable monograph by Professor H. B. Adams, Maryland's Influence on the Land Cessions; and also President Welling, in *Papers American Historical Association*, III, 411; Barrett, Evolution of the Ordinance of 1787.

[2] Sanborn, "Congressional Land Grants in Aid of Railroads," *Bulletin of the University of Wisconsin;* Donaldson, Public Domain.

Benton was the author of this system, which he brought forward as a substitute for the American system of Mr. Clay, and to supplant him as the leading statesman of the West. Mr. Clay, by his tariff compromise with Mr. Calhoun, abandoned his own American system. At the same time he brought forward a plan for distributing among all the states of the Union the proceeds of the sales of the public lands. His bill for that purpose passed both houses of Congress, but was vetoed by President Jackson, who, in his annual message of December, 1832, formally recommended that all public lands should be gratuitously given away to individual adventurers and to the states in which the lands are situated.[1]

"No subject," said Henry Clay, "which has presented itself to the present, or perhaps any preceding, Congress, is of greater magnitude than that of the public lands." When we consider the far-reaching effects of the government's land policy upon political, economic, and social aspects of American life, we are disposed to agree with him. But this legislation was framed under frontier influences, and under the lead of western statesmen like Benton and Jackson. Said Senator Scott, of Indiana, in 1841: "I consider the preëmption law merely declaratory of the custom or common law of the settlers."

National Tendencies of the Frontier

It is safe to say that the legislation with regard to land, tariff, and internal improvements — the American system of the nationalizing Whig party — was conditioned on frontier ideas and needs. But it was not merely in legislative action that the frontier worked against the sectionalism of the coast. The economic and social characteristics of the frontier worked against sectionalism. The men of the frontier had closer resemblances to the middle region than to either of the other sections. Pennsylvania had been the seed plot of southern frontier emigration, and although she passed on her settlers along the Great valley into the west of Virginia and the Carolinas, yet the industrial

[1] J. Q. Adams, Memoirs, IX, 247, 248.

society of these southern frontiersmen was always more like that of the middle region than like that of the tide-water portion of the South, which later came to spread its industrial type throughout the South.

The middle region, entered by New York harbor, was an open door to all Europe. The tide-water part of the South represented typical Englishmen, modified by a warm climate and servile labor, and living in baronial fashion on great plantations; New England stood for a special English movement, — Puritanism. The middle region was less English than the other sections. It had a wide mixture of nationalities, a varied society, the mixed town and county system of local government, a varied economic life, many religious sects. In short, it was a region mediating between New England and the South, and the East and the West. It represented the composite nationality which the contemporary United States exhibits, that juxtaposition of non-English groups, occupying a valley or a little settlement, and presenting reflections of the map of Europe in their variety. It was democratic and non-sectional, if not national; "easy, tolerant, and contented"; rooted strongly in material prosperity. It was typical of the modern United States. It was least sectional, not only because it lay between North and South, but also because with no barriers to shut out its frontiers from its settled region, and with a system of connecting water ways, the middle region mediated between East and West as well as between North and South. Thus it became the typically American region. Even the New Englander, who was shut out from the frontier by the middle region, tarrying in New York or Pennsylvania on his westward march, lost the acuteness of his sectionalism on the way.[1]

Moreover, it must be recalled that the western and central New England settler who furnished the western movement was not the typical tide-water New Englander: he was less conservative and contented, more democratic and restless.

The spread of cotton culture into the interior of the South finally broke down the contrast between the "tide-water" region

[1] Author's article in *The Ægis* [Madison, Wis.], November 4, 1892, and *Atlantic Monthly*, September, 1896, p. 294, and April, 1897, pp. 436, 441, 442.

and the rest of the South, and based southern interests on slavery. Before this process revealed its results, the western portion of the South, which was akin to Pennsylvania in stock, society, and industry, showed tendencies to fall away from the faith of the fathers into internal improvement legislation and nationalism. In the Virginia convention of 1829–1830, called to revise the constitution, Mr. Leigh, of Chesterfield, one of the tide-water counties, declared:

> One of the main causes of discontent which led to this convention, that which had the strongest influence in overcoming our veneration for the work of our fathers, which taught us to contemn the sentiments of Henry and Mason and Pendleton, which weaned us from our reverence for the constituted authorities of the state, was an overweening passion for internal improvement. I say this with perfect knowledge, for it has been avowed to me by gentlemen from the West over and over again. And let me tell the gentleman from Albemarle (Mr. Gordon) that it has been another principal object of those who set this ball of revolution in motion, to overturn the doctrine of state rights, of which Virginia has been the very pillar, and to remove the barrier she has interposed to the interference of the federal government in that same work of internal improvement, by so reorganizing the legislature that Virginia, too, may be hitched to the federal car.

It was this nationalizing tendency of the West that transformed the democracy of Jefferson into the national republicanism of Monroe and the democracy of Andrew Jackson. The West of the War of 1812, the West of Clay and Benton and Harrison and Andrew Jackson, shut off by the Middle States and the mountains from the coast sections, had a solidarity of its own with national tendencies.[1] On the tide of the Father of Waters, North and South met and mingled into a nation. Interstate migration went steadily on, — a process of cross-fertilization of ideas and institutions. The fierce struggle of the sections over slavery on the western frontier does not diminish the truth of this statement; it proves the truth of it. Slavery was a sectional trait that would not down, but in the West it could not remain sectional. It was the greatest of frontiersmen who declared: "I believe this government cannot endure

[1] Cf. Roosevelt, Thomas Benton, chap. i.

permanently half slave and half free. It will become all of one thing or all of the other." Nothing works for nationalism like intercourse within the nation. Mobility of population is death to localism, and the western frontier worked irresistibly in unsettling population. The effects reached back from the frontier, and affected profoundly the Atlantic coast and even the Old World.

Growth of Democracy

But the most important effect of the frontier has been in the promotion of democracy here and in Europe. As has been indicated, the frontier is productive of individualism. Complex society is precipitated by the wilderness into a kind of primitive organization based on the family. The tendency is anti-social. It produces antipathy to control, and particularly to any direct control. The taxgatherer is viewed as a representative of oppression. Professor Osgood, in an able article,[1] has pointed out that the frontier conditions prevalent in the colonies are important factors in the explanation of the American Revolution, where individual liberty was sometimes confused with absence of all effective government. The same conditions aid in explaining the difficulty of instituting a strong government in the period of the Confederacy. The frontier individualism has from the beginning promoted democracy.

The frontier states that came into the Union in the first quarter of a century of its existence came in with democratic suffrage provisions, and had reactive effects of the highest importance upon the older states whose peoples were being attracted there. An extension of the franchise became essential. It was *western* New York that forced an extension of suffrage in the constitutional convention of that state in 1821; and it was *western* Virginia that compelled the tide-water region to put a more liberal suffrage provision in the constitution framed in 1830, and to give to the frontier region a more nearly proportionate representation with the tide-water aristocracy. The rise

[1] *Political Science Quarterly*, II, 457; Sumner, Alexander Hamilton, chaps. ii–vii; Turner, in *Atlantic Monthly*, January, 1903.

of democracy as an effective force in the nation came in with western preponderance under Jackson and William Henry Harrison, and it meant the triumph of the frontier — with all of its good and with all of its evil element.[1] An interesting illustration of the tone of frontier democracy in 1830 comes from the same debates in the Virginia convention already referred to. A representative from western Virginia declared:

> But, sir, it is not the increase of population in the West which this gentleman ought to fear. It is the energy which the mountain breeze and western habits impart to those emigrants. They are regenerated, politically I mean, sir. They soon become *working politicians;* and the difference, sir, between a *talking* and a *working* politician is immense. The Old Dominion has long been celebrated for producing great orators; the ablest metaphysicians in policy; men that can split hairs in all abstruse questions of political economy. But at home, or when they return from Congress, they have negroes to fan them asleep. But a Pennsylvania, a New York, an Ohio, or a western Virginia statesman, though far inferior in logic, metaphysics, and rhetoric to an old Virginia statesman, has this advantage, that when he returns home he takes off his coat and takes hold of the plow. This gives him bone and muscle, sir, and preserves his republican principles pure and uncontaminated.

So long as free land exists, the opportunity for a competency exists, and economic power secures political power. But the democracy born of free land, strong in selfishness and individualism, intolerant of administrative experience and education, and pressing individual liberty beyond its proper bounds, has its dangers as well as its benefits. Individualism in America has allowed a laxity in regard to governmental affairs which has rendered possible the spoils system and all the manifest evils that follow from the lack of a highly developed civic spirit. In this connection may be noted also the influence of frontier conditions in permitting inflated paper currency and wild-cat banking. The colonial and revolutionary frontier was the region whence emanated many of the worst forms of paper currency.[2] The West in the War of 1812 repeated the

[1] Cf. Wilson, Division and Reunion, pp. 15, 24.

[2] On the relation of frontier conditions to Revolutionary taxation, see Sumner, Alexander Hamilton, chap. iii.

phenomenon on the frontier of that day, while the speculation and wild-cat banking of the period of the crisis of 1837 occurred on the new frontier belt of the next tier of states. Thus each one of the periods of paper-money projects coincides with periods when a new set of frontier communities had arisen, and coincides in area with these successive frontiers, for the most part. The recent radical Populist agitation is a case in point. Many a state that now declines any connection with the tenets of the Populists itself adhered to such ideas in an earlier stage of the development of the state. A primitive society can hardly be expected to show the appreciation of the complexity of business interests in a developed society. The continual recurrence of these areas of paper-money agitation is another evidence that the frontier can be isolated and studied as a factor in American history of the highest importance.

Attempts to check and regulate the Frontier

The East has always feared the result of an unregulated advance of the frontier, and has tried to check and guide it. The English authorities would have checked settlement at the head waters of the Atlantic tributaries and allowed the "savages to enjoy their deserts in quiet lest the peltry trade should decrease." This called out Burke's splendid protest:

> If you stopped your grants, what would be the consequence? The people would occupy without grants. They have already so occupied in many places. You cannot station garrisons in every part of these deserts. If you drive the people from one place, they will carry on their annual tillage and remove with their flocks and herds to another. Many of the people in the back settlements are already little attached to particular situations. Already they have topped the Appalachian mountains. From thence they behold before them an immense plain, one vast, rich, level meadow; a square of five hundred miles. Over this they would wander without a possibility of restraint; they would change their manners with their habits of life; they would soon forget a government by which they were disowned; would become hordes of English Tartars; and, pouring down upon your unfortified frontiers a fierce and irresistible cavalry, become masters of your governors and your counselors, your collectors and comptrollers, and of all the slaves that adhered to them. Such would, and

in no long time must, be the attempt to forbid as a crime and to suppress as an evil the command and blessing of Providence, "increase and multiply." Such would be the happy result of an endeavor to keep as a lair of wild beasts that earth which God, by an express charter, has given to the children of men.

But the English government was not alone in its desire to limit the advance of the frontier and guide its destinies. Tide-water Virginia[1] and South Carolina[2] gerrymandered those colonies to insure the dominance of the coast in their legislatures. Washington desired to settle a state at a time in the Northwest. In the constitutional convention of 1787 Gouverneur Morris declared that the western country would not be able to furnish men equally enlightened to share in the administration of our common interests. The busy haunts of men, not the remote wilderness, was the proper school of political talents. "If the western people get power into their hands, they will ruin the Atlantic interest. The back members are always most averse to the best measures." He desired, therefore, to fix such a rule of congressional representation that the Atlantic States could always outvote the Western.[3] Jefferson would reserve from settlement the territory of his Louisiana purchase north of the thirty-second parallel, in order to offer it to the Indians in exchange for their settlements east of the Mississippi. "When we shall be full on this side," he writes, "we may lay off a range of states on the western bank from the head to the mouth, and so range after range, advancing compactly as we multiply." Madison went so far as to argue to the French minister that the United States had no interest in seeing population extend itself on the right bank of the Mississippi, but should rather fear it. When the Oregon question was under debate, in 1824, Smyth, of Virginia, would draw an unchangeable line for the limits of the United States at the outer limit of two tiers of states beyond the Mississippi, complaining that

[1] *Debates in the Virginia Constitutional Convention*, 1829–1830.

[2] Calhoun, Works, I, 401–406.

[3] Elliot's Debates, V, 298. Cf. Josiah Quincy's outburst in the House of Representatives on the admission of Louisiana, January 14, 1811. See Johnston, American Orations, I, 145.

the seaboard states were being drained of the flower of their population by the bringing of too much land into market. Even Thomas Benton, the man of widest views of the destiny of the West, at this stage of his career declared that along the ridge of the Rocky mountains "the western limits of the republic should be drawn, and the statue of the fabled god Terminus should be raised upon its highest peak, never to be thrown down."[1] But the attempts to limit the boundaries, to restrict land sales and settlement, and to deprive the West of its share of political power were all in vain. Steadily the frontier of settlement advanced and carried with it individualism, democracy, and nationalism, and powerfully affected the East and the Old World.

Religious Organization

The most effective efforts of the East to regulate the frontier came through its educational and religious activity, exerted by interstate migration and by organized societies. Speaking, in 1835, Dr. Lyman Beecher declared: "It is equally plain that the religious and political destiny of our nation is to be decided in the West," and he pointed out that the population of the West "is assembled from all the states of the Union and from all the nations of Europe, and is rushing in like the waters of the flood, demanding for its moral preservation the immediate and universal action of those institutions which discipline the mind and arm the conscience and the heart. And so various are the opinions and habits, and so recent and imperfect is the acquaintance, and so sparse are the settlements of the West, that no homogeneous public sentiment can be formed to legislate immediately into being the requisite institutions. And yet they are all needed immediately in their utmost perfection and power. A nation is being 'born in a day.' . . . But what will become of the West if her prosperity rushes up to such a majesty of power, while those great institutions linger which are necessary to form the mind and the conscience and the

[1] Speech in the Senate, March 1, 1825; Register of Debates, I, 721.

heart of that vast world? It must not be permitted. . . . Let no man in the East quiet himself and dream of liberty, whatever may become of the West. . . . Her destiny is our destiny."

With the appeal to the conscience of New England, he adds appeals to her fears lest other religious sects anticipate her own. The New England preacher and the school-teacher left their mark on the West. The dread of western emancipation from New England's political and economic control was paralleled by her fears lest the West cut loose from her religion. Commenting, in 1850, on reports that settlement was rapidly extending northward in Wisconsin, the editor of the *Home Missionary* writes: "We scarcely know whether to rejoice or mourn over this extension of our settlements. While we sympathize in whatever tends to increase the physical resources and prosperity of our country, we cannot forget that with all these dispersions into remote and still remoter corners of the land the supply of the means of grace is becoming relatively less and less." Acting in accordance with such ideas, home missions were established and western colleges were erected. As seaboard cities like Philadelphia, New York, and Baltimore strove for the mastery of western trade, so the various denominations strove for the possession of the West. Thus an intellectual stream from New England sources fertilized the West. Other sections sent their missionaries; but the real struggle was between sects. The contest for power and the expansive tendency furnished to the various sects by the existence of a moving frontier had important results on the character of religious organization in the United States. The multiplication of rival churches in the little frontier towns had deep and lasting social effects. The effects of western freedom and newness in producing religious *isms* is noteworthy. Illustrations of this tendency may be seen in the development of the Millerites, Spiritualists, and Mormons of western New York in its frontier days. In general the religious aspects of the frontier deserved study.

Intellectual Traits

From the conditions of frontier life came intellectual traits of profound importance. The works of travelers along each frontier from colonial days onward describe certain common traits, and these traits have, while softening down, still persisted as survivals in the place of their origin, even when a higher social organization succeeded. The result is that to the frontier the American intellect owes its striking characteristics. That coarseness and strength combined with acuteness and inquisitiveness; that practical, inventive turn of mind, quick to find expedients; that masterful grasp of material things, lacking in the artistic, but powerful to effect great ends; that restless, nervous energy;[1] that dominant individualism, working for good and for evil, and, withal, that buoyancy and exuberance which come with freedom, — these are traits of the frontier, or traits called out elsewhere because of the existence of the frontier. We are not easily aware of the deep influence of this individualistic way of thinking upon our present conditions. It persists in the midst of a society that has passed away from the conditions that occasioned it. It makes it difficult to secure social regulation of business enterprises that are essentially public; it is a stumbling-block in the way of civil-service reform; it permeates our doctrines of education;[2] but with the passing of the free lands a vast extension of the social tendency may be expected in America.

Ratzel, the well-known geographer, has pointed out the fact that for centuries the great unoccupied area of America furnished to the American spirit something of its own largeness. It has given a largeness of design and an optimism to American

[1] Colonial travelers agree in remarking on the phlegmatic characteristics of the colonists. It has frequently been asked how such a people could have developed that strained nervous energy now characteristic of them. Cf. Sumner, Alexander Hamilton, p. 98, and Adams, History of the United States, I, 60; IX, 240, 241. The transition appears to become marked at the close of the War of 1812, a period when interest centered upon the development of the West, and the West was noted for restless energy. — Grund, Americans, II, i.

[2] See the able paper by Professor De Garmo on "Social Aspects of Moral Education," in the *Third Yearbook of the National Herbart Society*, 1897, p. 37.

thought.[1] Since the days when the fleet of Columbus sailed into the waters of the New World, America has been another name for opportunity, and the people of the United States have taken their tone from the incessant expansion which has not only been open, but has even been forced upon them. He would be a rash prophet who should assert that the expansive character of American life has now entirely ceased. Movement has been its dominant fact, and, unless this training has no effect upon a people, the American energy will continually demand a wider field for its exercise.[2] But never again will such gifts of free land offer themselves. For a moment, at the frontier, the bonds of custom are broken and unrestraint is triumphant. There is not *tabula rasa*. The stubborn American environment is there with its imperious summons to accept its conditions; the inherited ways of doing things are also there; and yet, in spite of environment, and in spite of custom, each frontier did indeed furnish a new field of opportunity, a gate of escape from the bondage of the past; and freshness, and confidence, and scorn of older society, impatience of its restraints and its ideas, and indifference to its lessons have accompanied the frontier. What the Mediterranean sea was to the Greeks, breaking the bond of custom, offering new experiences, calling out new institutions and activities, that, and more, the ever-retreating frontier has been to the United States directly, and to the nations of Europe more remotely. And now, four centuries from the discovery of America, at the end of a hundred years of life under the Constitution, the frontier has gone, and with its going has closed the first period of American history.

[1] See paper on "The West as a Field for Historical Study," in *Report of American Historical Association for 1896*, pp. 279–319.

[2] The commentary upon this sentence — written in 1893 — lies in the recent history of Hawaii, Cuba, Porto Rico, the Philippines, and the Isthmian canal.

CHAPTER III

THE GROWTH OF CITIES IN THE UNITED STATES[1]

Of late years there have been many able discussions of the problems of city government in the United States. Most of these discussions, however, have turned upon the forms of municipal governments and the dangers discernible in their workings: the existence and growth of cities have been assumed as a matter of course. Nevertheless, the fact that we have so many cities to govern is one of the most astonishing in history. A little more than a hundred years ago the whole population of the United States was under four millions, of whom hardly a hundred thousand lived in cities. There were in 1890 four hundred and forty-seven cities, with a total population of more than eighteen millions.[2] Since 1790, the population of the United States has increased nearly sixteen times, while the cities have increased in number more than seventy times, and the urban population nearly a hundred and forty times.

In the causes and development of this phenomenal growth may perhaps be found an explanation of some of the complicated problems of city government. This paper will therefore be devoted to three inquiries:

1. What causes have determined the sites and distribution of American cities? 2. What has been the growth of their population? 3. What is noticeable about the status and social condition of people in cities?[3]

[1] "The Rise of American Cities," by Professor Albert Bushnell Hart. Reprinted from Hart's Practical Essays on American Government, p. 162, *et seq.*, by permission of the author and the publishers, Messrs. Longmans, Green & Co., New York and London.

[2] In 1900 there were 545 cities containing 24,992,000 inhabitants, or 33.1 per cent of the total population. — Ed.

[3] In this volume only the discussion relating to the first inquiry is reproduced. — Ed.

At the outset, what is meant by the term "city"? The English usage, by which no place is strictly a city which has not a cathedral and a bishop, is no longer applicable even in England. To use the term for every place having a so-called "city" charter would include many an unimportant Charles City or Falls City. In New England there are often several centers of population still united under the old town government, but the aggregate is not a city in name. For convenience, the definition of the Tenth Census will be adopted: a city is any aggregate of eight thousand or more persons living under one local government.

Before noticing the rate of growth of particular cities, it is desirable to consider what causes have planted and nourished our chief centers of population. The reasons which can be given for the site of most ancient and mediæval cities are here singularly inapplicable. An Athenian or Salzburger suddenly placed in our midst would declare that this strange people had deliberately avoided the most eligible sites, and had exposed themselves to ruin. The intelligent Athenian or candid Salzburger must quickly see, however, that the conditions of life in the New World have been different. Our cities have grown up in a time of peace. Steam power, artificial roads, and the use of large craft have changed the character of manufactures and commerce. The political importance of cities has diminished, and their commercial importance has increased. Little as he might admire the external appearance of some of our cities, even Alexander or Wallenstein might share the admiration which Blücher expressed when taken through the streets of London after Waterloo: "Mein Gott, was für eine Stadt zum plundern!"

Most ancient or mediæval cities, as Jerusalem, Athens, and Rome, were grouped about a hill; or on an island, as were Paris, Rhodes, and Venice; or on a promontory, as Constantinople; or, if in flat land, they were not immediately on the coast, as London, Pisa, Cairo. The reason was a simple one: they felt themselves in danger of attack, and sought the most defensible situations. It is not too much to say that not one city in the United States owes its growth to its protected situation.

Quebec stands like a lion on its rock; but there is not, and never has been, one first-class fortress or citadel within our present limits. So far is this the case, that of ten larger cities in the United States, six, probably seven, are exposed to attack by sea and insufficiently protected.[1] Military authorities assure us that a bombardment is by no means the serious affair that people suppose. Nevertheless, the prosperity of the coast cities may at any time receive a terrible blow, because other than military reasons have determined their site.

A second great reason for the location of cities applies as efficaciously now as at any former time: it is the convenience of commerce. The sage observation that Providence has caused a large river to flow past every great city is as nearly true now as it was when Memphis, Babylon, and Cologne were built. As nature has determined the position of some cities by furnishing a bold and therefore a defensible site, so she has selected that of others by inequalities in the bed of streams. The site of many American cities is on a river at the head or foot of navigation, usually just above or below a fall. This is the case with Louisville and Buffalo. St. Paul marks the upper part of the Mississippi, as Troy marks the Hudson, and Duluth and Chicago the head waters of the St. Lawrence. More often the large city grows up at the mouth of a river or near its mouth. This is the case with many of our lake cities, as Cleveland and Milwaukee; so St. Louis stands on the first high land below the confluence of the Missouri and Mississippi; Baltimore owed its early growth to the Susquehanna trade; New Orleans and New York are famous examples.

The history of the world has shown that it is much less important for a city to have the length of a great river behind it than to have a good harbor before it. Newburyport at the mouth of the Merrimac, Saybrook at the mouth of the Connecticut, have long since fallen out of the race with Boston on the

[1] New York, Brooklyn, Philadelphia, Boston, Baltimore, San Francisco, and New Orleans are exposed: only Chicago, St. Louis, and Cincinnati are safe. [Since this was written the coast defenses have been considerably strengthened. — Ed.]

Charles, Philadelphia on the Schuylkill, and Providence on the Moshassuck. It is the harbor that counts most, and not the river navigation. The further up into the land a harbor penetrates, the more valuable it is. In America, as elsewhere in the world, the point where the tidal water of an estuary meets the fresh water of a river is marked by nature for the site of a settlement. Hence the foundation of the greatness of London, Hamburg, Bordeaux; hence the importance of Norfolk, Charleston, Baltimore, and Philadelphia. New York and San Francisco alone of our large cities lie at the mouth of an estuary.

The depth of harbors was for many years of less consequence than their accessibility and protection. From the little havens of the Cinque Ports issued the wasp's nest of vessels which protected the coast of England. From Duxbury, Falmouth, and Perth Amboy sailed the East Indiamen of a century ago. The increasing size and draught of seagoing steamers have caused a concentration of trade into the few large and deep harbors, and this is doubtless one cause of the disproportionate growth of the large cities in the United States. As the coast from Nova Scotia to New Jersey contains the best harbors in the North Atlantic ocean, the cities of that region have a natural advantage over their southern rivals. On the other hand, the ports from New York to Norfolk, and the lake ports, have an advantage in their nearness to supplies of coal; and the advantage increases as steamers take the place of sailing vessels.

Sixty years ago New England seemed likely to lose her commercial importance, because the mountains cut her off from direct communication with the West. It is not enough for a place to have a harbor and good communication with foreign countries in order to grow into a city. It must also have direct and easy connection with a rich country in the interior. Verona, though an interior city, has for ages lain at the mouth of the easiest Alpine pass. Trieste is the port for southern Germany. For the same reason, Baltimore, Charleston, Philadelphia, Chicago, and St. Paul have had a better opportunity for growth than Boston.

New York, in spite of her magnificent harbor, suffered from a mistake of the geologic forces. A glance at the map shows that the Great Lakes were meant to drain into the Hudson; and their waters still protest, as they thunder down Niagara, against an unnatural diversion to an estuary frozen one half the year. To remedy the mistake of nature, the state of New York constructed the Erie canal, finished in its first form in 1825; and the astonishing growth of the city is the fruit of that undertaking. Philadelphia, Washington, and Richmond vainly tried to imitate this triumph. But Baltimore rivaled it by the early construction of the Baltimore & Ohio Railroad.

The effect of our railroad system has been to make available the best harbors, wherever found, and to make large areas of rich country tributary to the cities upon them. Boston could scarcely live from New England products alone. New York depends for daily bread on Ohio, Michigan, and Minnesota. Of the six largest cities in the country, five are the larger Atlantic ports, — Boston, New York, Brooklyn, Philadelphia, Baltimore; and they are among the most distant from the center of food supply. The other city of the six, Chicago, illustrates another great change in modern, as compared with ancient, commercial conditions: Chicago is a great trade center. Its site was determined by the fact that a little creek made the most convenient harbor at the head of Lake Michigan; railroads diverged from it, railroads were built to it. It has become a distributing point for the states to the west of it. St. Paul and Minneapolis in the Northwest, St. Louis and Kansas City in the Southwest, owe their growth to the same cause. Their site was determined by their position on rivers, but the river trade is now of small importance.[1] The present growth of the interior cities is due to the network of connecting railways.

In the series of commercial reasons just discussed for the growth of cities, there is evident a tendency to concentrate trade. The few places which combine good harbors or a central situation with lake or river navigation, with established trade

[1] Except, of course, the trade down the river from St. Louis to New Orleans. Even this route is now paralleled by a railroad.

routes, with artificial means of transit, and with cheap coal, must more and more gather to themselves foreign and internal commerce. It is for these reasons that New York is and must always be the chief city in the western hemisphere.

The coast cities, however, owe only a part of their prosperity to their situation as points of exchange for foreign products. We sometimes lose sight of the fact that all our greater commercial cities are also great manufacturing cities. The first nine cities in population are the first nine in value of manufactured products.[1] New York in 1880 led in manufactures of clothing. Philadelphia, second only to Lynn in shoes, surpassed Lawrence in mixed textile goods. It is not merely that these cities manufacture more because they have more people: they have more people because they manufacture to advantage.

When manufacturing began on a large scale in the United States certain inland cities grew up, because they had an advantageous water power. Rochester and Minneapolis, and especially the towns on the Connecticut and Merrimac, owe their prosperity to the shrewdness of men who caused water to fall in an orderly manner through their overshot and turbine wheels rather than tumultuously over rocks. It is a very singular fact that the advantage of water-power sites is at present very slight.

[1] In 1900 the principal manufacturing centers were as follows:

Cities	Value of Products			Population
	Total	Rank	Number of States Outranked in Value of Products	
New York, N.Y.	$1,371,358,468	1	49	3,437,202
Chicago, Ill.	888,945,311	2	47	1,698,575
Philadelphia, Pa.	603,466,526	3	45	1,293,697
St. Louis, Mo.	233,629,733	4	37	575,238
Boston, Mass.	206,081,767	5	37	560,892
Pittsburg, Pa.	203,261,251	6	37	321,616
Baltimore, Md.	161,249,240	7	34	508,957
Cincinnati, Ohio	157,806,834	8	34	325,902
Cleveland, Ohio	139,849,806	9	32	381,768
San Francisco, Cal.	133,069,416	10	32	342,782

— Ed.

A high official in the Amoskeag Corporation — said to be the largest concern engaged in textile manufacturing in the world — has said that if Manchester, New Hampshire, the seat of the works, were not already built, it would not be built for the sake of utilizing that important water power. There are many magnificent mill sites in the North Carolina mountains still unused and likely to be unused for many years. Where coal is cheap steam power is, on the whole, more convenient: hence the growth of Fall River, New Bedford, and Providence; hence, also, the possibility of manufacturing in the large coast and inland cities, in competition with the water powers. We all recognize that Pittsburg owes its prosperity to the soft coal near by; we less often reflect that Baltimore, Philadelphia, and New York enjoy a similar advantage over the New England cities.

The success of manufactures and the consequent distribution of population into manufacturing cities depends, perhaps, less on the natural advantages of a place than on the skill and industry of the people. The great ease of transporting persons over large distances — an absolutely new thing in the history of the world — makes it possible to mass skilled laborers in cities. The coast cities enjoy the advantage of receiving such laborers direct from abroad, and thus in many cases they have the first choice. There is a corresponding disadvantage. Almost all the immigrants into the United States land at one of four ports, — Boston, New York, Philadelphia, Baltimore; and these cities fail to sift into the country beyond some elements which cause them great perplexity.

For the prosperity of the country it is far less important that population should grow than that it should grow intelligent. In this respect the coast cities have some advantage. The people of great seaports have always the inestimable stimulus of direct intercourse with the world abroad and at home. Hence the population of New York is more likely to absorb new ideas than the population of Lowell or Cincinnati. In manufacturing cities, small and great, social and political problems are more difficult. Here it is possible to employ the labor of women and children; the taxes are more likely to fall upon the large

corporations, and to be spent by men who have no property. The manufacturing cities, even the smaller ones, are more closely peopled than those whose greater interest is commerce.

A distinct class of cities, numerous and populous, has grown up in the last thirty years, away from the coast and from water powers, but around mines of coal and metals, or near deposits of petroleum. Pittsburg and its neighbor Allegheny are the most important. Places like Altoona, Cumberland, Scranton, and Wheeling are rapidly following them. Wherever there is coal manufactures spring up, and populous cities. Around other mines have grown sometimes strange and phenomenal places. Pithole, Pennsylvania, once a ragged, unpromising hill farm, became a city of thirty thousand people; and a few years later its handsome brick hotels and banks were inhabited by two people, and its railroad was torn up. A similar fate seems likely to overtake Virginia City, Nevada, and may possibly overtake Leadville.

In addition to the geographical reasons which have just been enumerated, there are certain other physical causes which assist the aggregation of people in a particular spot. That place which lies near a good water supply has a better chance of growth; a city which is easily drained ought to be more healthy; and a city which has a beautiful site, well improved, and a system of parks, attracts people of leisure. These causes have a smaller influence than they deserve: Philadelphia has now more than a million of people whose chief drink is Schuylkill water, and a part of whom grow up in spite of surface drainage. On the other hand, cities with fewer natural advantages cheerfully spend large sums on aqueducts or systems for pumping sewage. The less fortunately situated cities have often the best water and the best pleasure grounds. It is almost inconceivable that of all the wealthy cities on the Atlantic coast, not one has a water-front park of any size. The growth of the population has been unexpected to itself; and the inestimable privilege of a beautiful sea front has forever passed away. With the exception of Washington, Chicago, and Boston, hardly any city is now making adequate provision for parks for the next generation.

One of the causes which had most effect upon the growth of ancient and mediæval cities has very little operation in the United States. Corinth, Perugia, Augsburg, were little independent states. Syracuse, Florence, or Nuremberg could, on occasion, put an army of fifty thousand men into the field. The city was the unit of political life. Cities grew because the people were freer there than in the country. No such tendency has ever shown itself in America. Beyond a few angry suggestions, during the Civil War, that New York City be created into a separate state, there has been no attempt to make a city a commonwealth; no one moves from Boston to Philadelphia to escape a tyrant's rule; no county Democrat is exiled because Tammany has the upper hand; the cities are subordinated to the states. It is hard to see how it could be otherwise; but that dependence upon the state has brought a danger into our municipal system: the well-meaning people of the cities have come to look to the state government as a *deus ex machina;* they expect more from a change of charter than from a change of heart. It is probable that if the people of New York City were left to themselves, and could get no relief from Albany, they would have to-day a better, cleaner, and more economical government; and that the much more satisfactory government of Boston would be improved if the responsibility for it were thrown wholly upon the Bostonians.

When a city is once started, it is likely to grow from the mere force of gravitation. It is more than a figure of speech to use the terms which suggest the superior attractiveness of city life. What else is "politics" than what the people of the πόλις do? What is the "urbane" man but the dweller in the *urbs*, and the "pagan" but the unconverted dweller in the fields? Nor is it the higher and more intelligent class which is most attracted by city life: where one person is drawn to a city by schools, churches, concerts, libraries, and theaters, five are drawn by the excitement and stir and activity of a city. One of the greatest problems of modern times is how to get people out of the exhausting or despairing life of cities into the quiet and comfort of villages. And while the country life of Newport,

Lenox, and Manchester-by-the-Sea attracts a certain class for a season, annually more extended, an increasing number of well-to-do people leave the smaller towns in which they are first in wealth and influence to engage in a doubtful struggle for recognition by people of greater wealth and social power in the great cities. One city in the Union, the most beautiful of all, and the capital of the nation, owes its growth in considerable part to its attractiveness for people who can live anywhere they like.

The importance and the beauty of Washington, however, are chiefly due to another cause of growth, the last here to be discussed. It is distinctly an artificial city, a creation rather than a growth. There have been times when the will of a despot has caused the walls of a new city to rise: Alexander built almost as many cities as he destroyed. The will of the sovereign people has also established cities, and of these Washington is the principal one. Some city was likely to grow up on the lower Potomac, but that it should be Washington rather than Alexandria is due only to the combination of political forces which determined the site of the national capital, — to the quarrel over the assumption of state debts, the arrival of the North Carolina members, and the compromise arranged between the astute Hamilton and the too-confiding Jefferson. Several considerable cities have been built up in like manner by votes of state legislatures or conventions. Harrisburg would be no more important than Lancaster but for the Pennsylvania capital; Columbus, Ohio, has few natural advantages; Jefferson City, Missouri, would be a hamlet if the legislature had never met there. The smaller centers are powerfully affected by such political distinctions. A few months ago the people of a Kansas county were seen with arms in their hands settling the location of the county seat, or bodily moving houses from one would-be metropolis to another.

The site of Indianapolis was fixed near the center of gravity of Indiana; but its growth is due to another artificial cause, peculiar to new countries like America. It is the center of a great system of radiating railroads; and it has grown, while

Cairo, at the confluence of the Ohio and the Mississippi, has decayed. To create a city by converging railroads upon a spot in the wilderness is not always possible; but when such a center is formed, it draws population to itself. There was a time when the established towns objected to the noise and bustle of railroads, and compelled them to avoid their limits; for this reason the Boston & Lowell Railroad was obliged to steer between old towns like Woburn and Wilmington. Now towns strive, compete, and tax themselves to bring a railroad; and Woburn and Wilmington are glad to have even branch connections. The location of the first repair and construction shops makes the nucleus of a town or an addition to an existing town. A positive and even whimsical influence has been exerted by railroads in their choice of termini. But in the long run the railroads must go to the cities, and not the cities to the railroads. Racine and Superior City and Dunkirk are discouraging examples to the company which proposes to create a city by bringing the end of a line of rails to its site.

In their effect upon the older cities, possessed already of inalienable advantages, railroads have been more important than in the creation of new cities. When the Alleghenies were pierced, western commerce poured down into the termini of the railroads. The keen eye of Calhoun early saw that the ship must come to meet the car, and he earnestly advocated a great railroad from Charleston northwestward. But Baltimore, and a little later Philadelphia, had western lines years before Charleston or Mobile or Savannah or Norfolk or Richmond, and even before New York, Boston, Portland, and Montreal. The passes now occupied by the New York Central, Pennsylvania, Baltimore & Ohio, and Chesapeake & Ohio railroads are as much trade routes as the Suez canal or the Bosporus. No rival roads can compete on equal terms, and no neighboring cities can outstrip the termini of these great trunk lines.

Another form of artificial stimulus to city building has had little influence in the United States. A colonized and colonizing country, no cities have been built up by distinct, elaborate schemes of colonization. Settlements like Marietta have not

grown to the dignity of cities. Settlements like Rugby have failed for want of adaptation to the circumstances.

The principles upon which the growth of cities depends, as described in this paper, may perhaps be seen more clearly by applying them to a few specific cases. New York was first settled because it was an island, — a state of things which the people have since attempted, at great cost, to remedy. It is susceptible of defense against modern forms of attack, though at present its defenses are little more substantial than that fear of torpedoes and rumor of a novel steam craft which kept the British out in 1814. It has the best deep harbor on the Atlantic coast, easy of access for the largest vessels in the world. It is the Mecca of most imports. It lies at the end of a magnificent chain of internal navigation, reaching to Chicago and Duluth, and is the center of some of the greatest railroad systems in the world. Further, it is the recognized financial center of the United States. Commercially, therefore, it has no rival in the United States, and can never have any till the hills sink down behind Boston and Philadelphia, as they do in the Mohawk valley. The nearness of coal and the abundant supply of labor of all kinds give it a great advantage as a manufacturing city. New York, with its adjuncts, Brooklyn, Jersey City, and other near cities, has nearly three million people, and is already the second center of population in the world. It has few artificial advantages: it is not the capital of the state or nation; it is divided by arms of the sea from two of its three systems of railroads; it does not attract people by the character of its government. It is the largest city because it has the largest opportunity.

Boston, despite its great natural advantages, is a great city chiefly because of the character of its leading men. Like New York, it is defended from foreign enemies only by a sense of what is proper among gentlemen. The harbor is a fine one, though not easy to enter for large vessels. Its eminence depends less on the western business than on the fact that it is the supply point for considerable parts of New England. Indeed, it is the intimate connection with the business of all New England which makes Boston so important: as a manufacturing

center, it is first in nothing, and only third in curried leather and women's clothes. But it is the center of administration for the New England mills, and every pound of goods manufactured pays its tribute. It gets its share of immigration from abroad, and more than its share of people from other communities in the United States. The natural beauty of the city is an attraction, greatly aided by the park and other improvements. More than any other city in America, it draws people to it by the excellence of its schools and libraries, and by the public spirit of its citizens.

Chicago is great both from natural and artificial causes. It is not exposed to foreign attack. The head, in that direction, of the magnificent lake water ways, it is practically the western terminus of the Erie canal, and the most important station on the great trade route from New York to the Pacific coast and eastern Asia. Still more important, and the foundation of the wealth of Chicago, is the great valley of the upper Mississippi, the most fertile large area now occupied by man. Special manufacturing advantages it does not possess, save that Ohio and Pennsylvania coal form a return cargo for its grain fleet. These commercial reasons completely compensate for the natural disadvantages of the place, and the tremendous energy and skill of the people of Chicago will soon make it and keep it the second city in the Union. It was this energy which early caused the railroads to stretch out like *antennæ* to the West, and which then foresaw the necessity of a like connection with the East. It is fortunate for the people of the city, and of other cities likely to imitate it, that this restless vigor is now hastening to beautify a city of which the site has few natural advantages. Handsome houses, beautiful parks, imposing public buildings, great libraries, — in these Chicago bids fair to surpass most of her older rivals, and in the Columbian Exposition has become the teacher of the nation in architecture, as in energy.

CHAPTER IV

AMERICAN AGRICULTURE

1. The Agricultural Resources of the United States[1]

The accompanying map, prepared for the summary of internal commerce, Bureau of Statistics, Treasury Department, presents at a glance the national resources of the country in their relation to agriculture.

The internal commerce in the United States may be said to be carried on between six agricultural divisions on the basis of the staple industries which are fundamental in the prosperity of the different sections:

1. In New England, dairying, trucking, and mixed farming have received their fullest development, and the same may be said of New York and parts of the other Middle States. The entire Northeast, including New England, New York, and the leading Middle States, is also so largely engaged in manufacturing as to comprise what may be called the industrial section of the United States. This group of states is, therefore, closely dependent upon the rest of the country for such raw materials as the other farming sections supply.

2. The second division is conveniently designated as the cotton belt, comprising all that country lying south of the thirty-seventh parallel of latitude and extending west as far as the western boundary of Texas. This whole territory is primarily dependent upon cotton culture for its prosperity.

3. North of this territory, lying between the thirty-fifth and forty-third parallels of latitude and extending to the western boundaries of Kansas and Nebraska, lies the third staple section, which may be called the corn and winter-wheat belt of the

[1] From the Report of the Industrial Commission, XIX, 46–47 (Final Report).

United States. Within this belt the production of live stock has also become a basic factor in agriculture.

4. North of the forty-third parallel, extending westward from the Great Lakes to the eastern boundary of Montana and Wyoming, lies the spring-wheat belt.

5. The states and territories usually known as the Rocky Mountain states and territories, comprising Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada, are devoted to the production of wool and live stock as fundamental industries.

6. The Pacific Coast states of Washington, Oregon, and California are still primarily agricultural. Wheat, barley, live stock, timber, and fruits constitute the sources of their prosperity.

This geographical grouping of agricultural activities lies at the basis of the internal commerce of the United States.

Under the present state of agricultural development no section of the country has reached such a degree of self-sufficiency as to be independent of other sections, both for its means of subsistence and its materials of manufacture. Consequently the development of large trade centers is dependent upon the accumulation of staples and their distribution to various consuming uses throughout the country and the rest of the world. Manufactures and merchandise contribute a comparatively minor portion of the total tonnage carried on the railroads of the country. The dividend-earning freight of western railroads, for example, is found chiefly in the volume of grain and cattle shipments. The southern railroads rely largely on cotton, lumber, fruits, and vegetables for their prosperity. Merchandise and manufactures are rather of the nature of a supplementary freight-earning business.

2. Agricultural Production in 1906[1]

Preliminary crop estimates, subject to modification, must be used in the following review of the year's farm production, in advance of the final estimates of the department, to be made a

[1] From the report of Honorable James Wilson, Secretary of Agriculture, for the year 1906.

little later. The estimate of total agricultural wealth production has been continued from previous years and is again presented as an indication of the financial results of the year's operations. All attempts in the past, by subtracting from this grand total of value such products as are used wholly or in part in the making of other farm products in order that the farmer's net wealth production might be ascertained, have given no indication of what that net production was and have only obscured the matter.

Taken at that point in production at which they acquire commercial value, the farm products of the year, estimated for every detail presented by the census, have a farm value of $6,794,000,000. This is $485,000,000 above the value of 1905, $635,000,000 above 1904, $877,000,000 above 1903, and $2,077,000,000 above the census for 1899.

The value of the farm products of 1906 was 8 per cent greater than that of 1905, 10 per cent over 1904, 15 per cent over 1903, and 44 per cent over 1899.

A simple series of index numbers is readily constructed, which shows the progressive movement of wealth production by the farmer. The value of the products of 1899 being taken at 100, the value for 1903 stands at 125, for 1904 at 131, for 1905 at 134, and for 1906 at 144.

* * * * * * * *

Corn remains by far the most valuable crop, and the figure that it may reach this year is $1,100,000,000 for 2,881,000,000 bushels — perhaps a little under the value of the next largest crop, that of 1905.

The cotton crop, fiber and seed combined, follows corn in order of value, although it is only three fifths of the value of the corn crop. No comments here must be regarded as indicating what the department's estimate of the cotton-fiber production is to be. Upon the basis of the general commercial expectation of a crop, it should be worth to the grower nearly $640,000,000. In Texas alone the cotton crop is greater than that of British India and nearly three times that of Egypt, and it is half as much again as the crop of the world, outside of the United States, India, and Egypt.

Hay is a crop that receives small popular attention, and yet it is the third one in value if cotton seed is included in the cotton crop, and this year it approaches $600,000,000 for a product that is short by perhaps 8,000,000 tons.

Wheat. The fourth crop in order of value is wheat, which this year may be worth over $450,000,000, a value that has been exceeded in several years; but in quantity this year's crop, with its 740,000,000 bushels, is only 8,000,000 bushels below the largest crop grown, — that of 1901.

Oats. The crop of oats, on account of unfavorable weather, has fallen below the usual amount, but its value will be perhaps not far under $300,000,000, or about the same as for 1905, and not much under the highest value reached, in 1902.

Potatoes. With a probable crop of fully 300,000,000 bushels, potatoes reach next to their highest production, which was in 1904; but the total value, $150,000,000, rests upon a rather low average per bushel and has been exceeded in other years.

Barley. Seventh among the crops in order of value is barley, a cereal that has gained 21 per cent in production in seven years. The 145,000,000 bushels grown this year may be worth $65,000,000, both bushels and dollars being much more than for the highest preceding years, — 1904 being the previous record year for yield and 1902 for value.

Tobacco, which has shown weakness for several years on account of low prices, while not yet recovering its former place in pounds grown, has a crop this year of 629,000,000 pounds, with a value which is in close company with the three years of highest value, and it is expected will be worth $55,000,000, or perhaps $2,000,000 more.

Sugar. A remarkable development has been made within a few years by now the ninth crop, — beet sugar. The production in 1906 is placed at 345,000 long tons, with a value supposed to be near $34,000,000. Seven years ago only 72,972 tons were produced, and their value was about $7,000,000.

The year was a rather bad one for cane sugar, but in spite of this the total production of beet and cane sugar slightly exceeded the highest previous figure, although in value of sugar the year

stands second. The value of all kinds of sugar, sirup, and molasses reaches a total of $75,000,000, second only to 1904, which was cane sugar's best year.

Flaxseed. The 27,000,000 bushels of flaxseed have been exceeded by three years, although the value, $25,000,000, reaches the highest point.

Rice, standing twelfth in order, is another crop with its highest value perhaps $18,000,000, although in production the 770,000,000 pounds of rough rice are second to 1904. Markets that have developed in Hawaii and Porto Rico have helped to keep the price high enough to account for the total value placed upon the crop.

Rye has become a minor crop, and has now fallen below rice in value. The crop of this year is below the larger crops of recent years, and is about 28,000,000 bushels, worth perhaps $17,000,000.

Hops. The fourteenth crop is hops, which reached its largest dimensions this year with 56,000,000 pounds, and as high a value as it has ever had, except in 1904, say $7,000,000.

3. The General Characteristics of American Agriculture [1]

It is proposed in this paper to take a general view of the characteristics of American agriculture. Ever since the revolt of the British colonies nullified the royal prohibition of the settlement of the Ohio valley, the frontier line of our population has been moving steadily westward, passing over one, two, and even three degrees of longitude in a decade, until now it rests at the base of the Rocky mountains. The report of the Public Land Commission to Congress, just issued from the press, states that the amount of arable lands still remaining subject to occupation under the Homestead and Preëmption acts is barely sufficient to meet the demand of settlers for a year or two to come. This would seem a fitting point from which to review the course of American agriculture through the last hundred

[1] By Francis A. Walker. Reprinted from Tenth Census, III, xxxi–xxxiii. This first appeared in the *Princeton Review*, May, 1882.

years; to inquire what have been its methods and what it has accomplished.

The subject may be treated under the following titles:

1. As to the tenure of the soil.
2. As to character of the cultivators as a class.
3. As to the freedom and fullness of experiment upon the relations of crops to climate and to local soils.
4. As to what has been done biologically to promote our agriculture.
5. As to what has been done mechanically.
6. As to what has been done chemically, — under which title we shall have occasion to explain the westward movement of the field of cultivation of wheat and corn and the southwestward movement of the cotton culture.

First. The tenure of land in the United States is highly popular. Throughout the northern and western states this has always been so. The result has not been wholly due, as one is apt to think, to the existence of vast tracts of unoccupied land "at the West," whatever that phrase may at the time have meant, whether western New York in 1810, or Ohio in 1830, or Iowa in 1850, or Dacotah in 1880. An aristocratic holding of land in New England would have been quite as consistent with a great breadth of free lands across the Missouri as is such a holding of land in England consistent with the existence of boundless fertile tracts in Canada and Australia under the laws of the same empire.

The result in the United States has been due partly to the fact just noted, combined with the liberal policy of the government relative to the public domain; partly to excellent laws for the registration of titles and the transfer of real property in nearly every state of the Union; and partly to the genius of our people, their readiness to buy or to sell, to go east or to go west, as a profit may appear.

But while we have thus enjoyed a highly popular tenure of the soil, this has not been obtained by the force of laws compelling the subdivision of estates, as in France, under the law of "partible succession"; nor has it been carried so far as to create

a dull uniformity of petty holdings. If, as Professor Roscher remarks, "a mingling of large, medium, and small properties, in which those of medium size predominate, is the most wholesome of political and economical organizations," the United States may claim to have the most favorable tenure of the soil among all the nations of earth. We have millions of farms just large enough to profitably employ the labor of the proprietor and his growing sons; while we have, also, multitudes of considerable estates upon which labor and moneyed capital, live stock and improved machinery, are employed under skilled direction; and we have, lastly, those vast farms, the wonder of the world, in Illinois and California, where 1000 or 5000 acres are sown as one field of wheat or corn, or, as on the Dalrymple farms in Dacotah, where a brigade of six-horse mowers go, twenty abreast, to cut the grain that waves before the eye almost to the horizon.

Whereas in France the number of estates is almost equal to the number of families engaged in agricultural pursuits, the number of separate farms with us is somewhat less than one half the number of persons actually engaged in agriculture, there being, on the average, perhaps 210 to 220 workers to each 100 farms.

At the South the institution of slavery, with the organization of labor and the social ideas carried along by slavery, generated and maintained a comparatively aristocratic tenure of the soil. The abolition of slavery, accomplished as it was by the violence of war, has not only created a new class desirous of acquiring land, but, by impoverishing the former masters, has brought no small proportion of the plantations into the market, with the result that farms have been rapidly multiplied in this section. Since 1870 the number of farms in thirteen of the late slave states for which I have the statistics has increased 65 per cent; and this movement towards the subdivision of the large plantations is likely, in the absence of capital, to carry on extensive operations, to continue until the tenure of the soil shall be relatively even more popular than in the North.[1] Mr. Edward Atkinson, an

[1] In all sections of the country the average size of a farm decreased from 1850 to 1880. Since that date there has been an increase in some sections, but

authority on the subject, holds that this minute subdivision of land will be peculiarly favorable to the cultivation of cotton.

Of the 3,800,000 farms, approximately, into which the cultivated area of the United States is divided, 60 or even 70 per cent are cultivated by their owners. In the Northern States the proportion rises to 80 per cent or even higher. Connecticut, Maine, and Massachusetts, of the New England States, and Wisconsin, Michigan, and Minnesota, of the Northwestern States, show an excess of 90 per cent. The rent of leased farms in New England is in a large majority of cases paid in money. In all other sections of the country rents are generally stipulated to be paid in some definite share of the produce, the proportion in many of the Southern and Western States being three, four, or five farms rented for shares of the produce to one for which a money rent is paid.[1]

in the South Atlantic States the decrease continued down to 1900. The following table shows the average number of acres per farm in the various geographic divisions in each census year since 1850.

Geographic Divisions	1900	1890	1880	1870	1860	1850
The United States	146.6	136.5	133.7	153.3	199.2	202.6
North Atlantic	96.5	95.3	97.7	104.3	108.1	112.6
South Atlantic	108.4	133.6	157.4	241.1	352.8	376.4
North Central	144.5	133.4	121.9	123.7	139.7	143.3
South Central	155.4	144.0	150.6	194.4	321.3	291.0
Western	386.1	324.1	312.9	336.4	366.9	694.9
Alaska and Hawaii	1142.1	. . .	. . .	. . .	. . .	. . .

— Ed.

[1] Of the 5,739,657 farms enumerated by the census in 1900 the various forms of tenure were as follows:

Geographic Divisions	Total	Owners	Part Owners	Owners and Tenants	Managers	Cash Tenants	Share Tenants
The United States	5,739,657	3,149,344	451,515	53,299	59,213	752,920	1,273,366
North Atlantic	677,506	490,066	27,207	6,332	13,119	66,361	74,421
South Atlantic	962,225	474,540	46,899	6,073	9,115	172,699	252,899
North Central	2,196,567	1,271,798	266,405	26,020	19,618	207,732	404,994
South Central	1,658,166	743,097	86,469	13,404	9,650	286,091	519,455
Western	242,908	169,147	24,396	1,470	7,583	18,782	21,530
Alaska and Hawaii	2,285	696	139	. . .	128	1,255	67

— Ed.

Second. Of the character of the cultivators of the soil in the United States it will not be necessary to speak at length. Confining our view to the country north of the Potomac and the Ohio, we say that, unlike the cultivators in any country of Europe except Switzerland and, perhaps, Scotland, they have at no stage of our history constituted a peasantry in any proper sense of the term. The actual cultivators of the soil here have been the same kind of men precisely as those who filled the professions or were engaged in commercial and mechanical pursuits. Of two sons of the same mother one became a lawyer, perhaps a judge, or went down to the city and became a merchant, or gave himself to political affairs and became a governor or a member of Congress; the other stayed upon the ancestral homestead, or made a new one for himself and his children out of the public domain farther west, remaining through his life a plain hard-working farmer.

Now this condition of things has made American to differ from European agriculture by a very wide interval. There is no other considerable country in the world where the same mental activity and alertness have been applied to the cultivation of the soil as to trade and so-called industry.

We have the less occasion to dwell now upon this theme, because we shall be called to note, under several heads following, striking illustrations of the effects of this cause in promoting the success of American agriculture.

And while the character of the native cultivators of the soil has been such as described, those who have come to us from foreign countries have caught the time and step and the spirit of the national movement with wonderful ease. As recruits received into an old regiment, with veterans behind, before, and on either side, with examples everywhere of the right way of doing things, and breathing an atmosphere surcharged with soldierly instincts, are soon scarcely to be distinguished from the heroes of ten campaigns, so the Germans, the Scandinavians, and, though in a less degree, the Irish and French Canadians, who have made their homes where they are surrounded by the native agriculturists, have become in a short time almost as

good Yankees, if not too near the frontier of settlement, as if they had been born upon the hills of Vermont.

While the cultivating class at the North has been as thus hastily characterized, at the South the soil was, until the War of the Rebellion, tilled by a race of blacks degraded and brutalized so far as is implied in a system of chattel slavery. Upon the fruits of their labor the master lived, either in luxury or in squalor, according to the number of those whose unpaid services he could command. The great majority of the slave-holding class lived far more meanly than ordinary mechanics at the North, or even than the common day laborers among us.

Of the 384,000 slaveholders of 1860, 20 per cent owned one slave each; 21 per cent more owned but two or three; those who owned five slaves or fewer comprised 55 per cent of the entire number; while 72 per cent had less than ten slaves, including men, women, and children. To the vast majority of this class slavery meant, simply and solely, shirking work; and to enjoy this blessed privilege they were content to live in miserable huts, eat the coarsest food, and wear their butternut-colored homespun. The slave worked just as little as he could, and just as poorly as he dared; ate everything on which he could lay his hands without having the lash laid on his back; and wasted and spoiled on every side, not from a malicious intention, but because he was ignorant, clumsy, and stupid, or at least stupefied. The master lived upon whatever he could wrest from laborers of this class. Of the planters with seven cabins or families of slaves, averaging five each, including house servants, aged invalids, and children, Mr. Frederick Law Olmsted, in his work on "The Cotton Kingdom," estimated the income "to be hardly more than that of a private of the New York metropolitan police force." Yet there were only about 20,000 slaveholders in 1860 who held slaves in excess of this number. Of these two or three thousand lived in something like state and splendor.

What the industrial outcome of the abolition of slavery will be it is yet too early to decide; but we already know that we are past the danger of "a second Jamaica," of which we had

once a reasonable fear. The blacks are already under the impulse of their own wants, working better than they did beneath the lash, and those wants are likely to increase in number and intensity.

As to the poor whites of the South, I am disposed to believe that they are preparing for us a great surprise. We have been accustomed to think of them as brutalized by slavery until they had become lazy, worthless, and vicious. Perhaps we shall find that the poor whites have been suppressed rather than degraded, and that beneath the hunting-fishing-lounging habit which slavery generated and maintained lies a native shrewdness almost passing Yankee wit, an indomitable pluck, such as has made the fights of Sharpsburg, Fredericksburg, and Gettysburg memorable forever in the history of mankind, and an energy which, when turned from horse races, street fights, cocking mains, hunting, and fishing, to breaking up the ground, felling the forest, running the mill, exploiting the mine, and driving trade, may yet realize all the possibilities of that fair land.

Third. To ascertain what are the adaptations of any piece of ground to the cultivation of any single crop, and what variety and order of crops will best bring out the capabilities of soil and climate in the production of wealth, may seem a simple thing, but it is not. It is so far from being a simple thing that a race of men, not barbarous, but, as we call them, civilized, may inhabit a region for an indefinite period and this thing not be done at all. Such may be the lack of enterprise, such the force of tradition, that crops may be cultivated from generation to generation, and from century to century, while the question has never yet been fairly determined whether the agriculture of the district might not advantageously be reënforced, and the soil be relieved, by the introduction of new crops, or even by throwing out the traditionary crops altogether.

Gonzales in his "Tour of England" (1730) wrote: "And my tutor told me that a good author of their own made this remark of Wiltshire, 'that an ox left to himself would, of all England, choose to live in the north of this county, a sheep in the south part of it, and a man in the middle of both, as partaking of the

pleasure of the plain and the plenty of the deep country.'" The remark does not exaggerate the nicety of those distinctions which determine the range of the profitable cultivation whether of an animal or a vegetable species. A certain rough canvass of the agricultural capabilities of any district is easily made, and a process of elimination early takes place by which certain crops are discarded, for once and for all, as hopeless. But among the great variety of crops which may be cultivated in any region, justly to discriminate between the good and the very good, and to reject those which, though within the "limit of tolerance," as the money-writers say, are yet on the whole, and in the long run, not profitable, demands long, careful, and elaborate experimentation. Beyond this is the selection of varieties within the retained species, in which alone may reside the possibilities of success or failure ; the fortunate choice of varieties, among the almost indefinite number, often making all the difference between profit and no profit.

To do this work satisfactorily requires great mental enterprise and what we may call curiosity, a natural delight in experimentation, a ready apprehension combined with persistency, in due measure, and with a sound judgment. To do this work both well and quickly, being neither slow in testing new and promising subjects, nor easily discouraged by the accidents which beset initiation and experiment, nor yet reluctant in drawing the proper inference from failure, would task the intellectual powers of any race of men.

In Europe the knowledge of soils and of climate, on which the cultivation of large estates or personal properties is based, is the accumulation of hundreds of years of experience. In the United States the course of settlement has called upon our people to occupy virgin territory as extensive as Switzerland, as England, as Italy, and latterly as France or Germany, every ten years. And it has been in meeting the necessity of a rapid, rough-and-ready reconnoissance of new soils under varying climatic conditions that the character of our cultivating class, as indicated under the previous title, has come most strikingly into play.

During the colonial period the work of experiment had so far advanced that every crop but one (sorghum) now recognized in the official agricultural statistics of the country was cultivated in the region east of the Alleghenies. In the long course of experiment which had resulted in the naturalization of the crops now so well known in New England, the following had, according to Professor Brewer, been tried and rejected from our agriculture, viz. hemp, indigo, rice, cotton, madder, millet, spelt, lentils, and lucern.

But while so much of the adaptations of our general climate to agriculture had been thus easily mastered, much in the way of studying the agricultural capabilities of the infinite varieties of soil subject to this climate remained to be done within the region then occupied; while with every successive extension of the frontier of settlement the same work has had to be done for the new fields brought under cultivation. To say with what quick-wittedness and openness of vision, what intellectual audacity yet strong common sense, what variety of resource and facility of expedients, what persistency yet pliancy, the American farmer has met this demand of the situation would sound like extravagant panegyric. No other agricultural population of the globe could have encountered such emergencies without suffering tenfold the degree of failure, loss, and distress which has attended the westward movement of our population during the past one hundred years.

Fourth. In asking what has been done biologically to promote American agriculture, we have reference to the application of the laws of vegetable and animal reproduction, as discovered by study and experiment, to the development of new varieties of plants and of animals, or to the perfection of individuals of existing varieties. In this department of effort the success of the American farmer has been truly wonderful, and our agriculture has profited by it in a degree which it would be difficult to overestimate. A few examples will suffice for our present occasion.

Receiving the running horse from England, we have so improved the strain that for the two years past, notwithstanding the unlimited expenditure upon racing studs in England,

notwithstanding that English national pride is so much bound up in racing successes, and notwithstanding the grave disadvantages which attend the exportation of costly animals and their trial under the conditions of a strange climate, the honors of the British turf have been gathered, in a degree almost unknown in the history of British racing, by three American horses; and while Iroquois was last summer winning his unprecedented series of victories, two if not three American three-year-olds, generally believed to be better than Iroquois, were contesting the primacy at home.

The trotting horse we have created, — certainly the most useful variety of the equine species, — and we have improved that variety in a degree unprecedented, I believe, in natural history. Two generations ago the trotting of a mile in 2 m. 40 sec. was so rare as to give rise to a proverbial phrase indicating something extraordinary; it is now a common occurrence. "But a few years ago," wrote Professor Brewer in 1876, "the speed of a mile in 2.30 was unheard of; now perhaps five or six hundred horses are known to have trotted a mile in that time." The number is to-day perhaps nearer one thousand than five hundred. Steadily onward have American horse raisers pressed the limit of mile speed, till, within the last three seasons, the amazing figures 2.10 have been reached by one trotter and closely approached by another.

Take an even more surprising instance. About 1800 we began to import in considerable numbers the favorite English cattle, the shorthorn. The first American shorthorn herdbook was published in 1846. In 1873 a sale of shorthorn cattle took place in western New York, at which a herd of 109 head were sold for a total sum of $382,000, one animal, a cow, bringing $40,600; another, a calf, five months old, $27,000, both for the English market. To-day Devons and shorthorns are freely exported from Boston and New York to England to improve the native stock.

In 1793 the first merino sheep, three in number, were introduced into this country, though, unfortunately, the gentleman to whom they were consigned, not appreciating their peculiar

excellencies, had them converted into mutton. Since that time American wool has become celebrated both for fineness of fiber and for weight of fleece. The finest fiber, by microscopic test, ever anywhere obtained, was clipped about 1850 from sheep bred in western Pennsylvania. More recently the attention of our woolgrowers has been especially directed to increasing the quantity rather than to improving the quality of the wool.

Illustrations of the success of American agriculture, biologically, might be drawn from the vegetable kingdom, did space permit.

Fifth. To ask what has been done mechanically to promote our agriculture is to challenge a recital of the better half of the history of American invention. Remarkable as have been the mechanical achievements of our people in the department of manufacturing industry, they have been exceeded in the production of agricultural implements and machinery, inasmuch as, in this branch of invention, a problem has been solved that does not present itself for solution, or only in a much easier shape, in those branches which relate to manufactures; the problem, namely, of combining strength and capability of endurance with great lightness of parts.

In no other important class of commercial products, except the American street carriage or field wagon, are these desired qualities so wonderfully joined as in the American agricultural machines, while the special difficulty arising from the necessity of repairs on the farm, far from shops where the services of skilled mechanics could be obtained, has been met by the extension to this branch of manufacture of the principle of interchangeable parts, a principle purely American in its origin. Through the adoption of this principle by the makers of agricultural machines, a farmer in the Willamette valley of Oregon is enabled to write to the manufacturer of his mower or reaper or thresher, naming the part that has been lost or become broken or otherwise useless, and to receive by return mail, third class, for which the government rate will be only two or three shillings, the lacking part, which, with a wrench and a screw-driver, he can fit into its proper place in fifteen minutes.

All the agricultural machines of to-day are not originally of American invention, although most of them are, in every patentable feature; but I am not aware that there is at present in extensive use one which does not owe it to American ingenuity that it can be extensively used. Without the improvements it has received here, the best of foreign inventions in this department of machinery would have remained toys for exhibition at agricultural fairs, or machines only to be employed on large estates under favorable conditions.[1]

[1] In the Yearbook of the Department of Agriculture for 1899 Mr. George K. Holmes presents, among others, the following facts concerning the use of agricultural machinery:

CORN CULTIVATION AND HARVESTING

Between 1855 and 1894 the following changes took place in the cultivation of corn. The time of human labor required to produce one bushel of corn on an average declined from 4 hours and 34 minutes to 41 minutes, and the cost of the human labor to produce this bushel declined from 35¾ cents to 10½ cents.

In the earlier years the plow and harrow of that period were used; the check rows were marked with the shovel plow; the seed was dropped by hand from a bucket or pouch carried by the farmer, and covered with a hoe; the cultivating was done with a shovel plow; knives were used for cutting the stalks from the ground by hand; husking pegs were worn on the hand in husking; the stalks, husks, and blades were cut into fodder with an old-time machine turned by hand, and the corn was shelled by hand, either on a frying-pan handle or on a shovel or by rubbing the cob against the unshelled ears.

A radical change had taken place in 1894. The earth was loosened with a gang plow, and a disk harrow very thoroughly pulverized it. A corn planter drawn by a horse planted the corn, and the top soil was pulverized afterwards with a four-section harrow.

When it came to harvesting the corn, a self-binder drawn by horses cut the stalks and bound them, and the shocks of stalks were then hauled to a machine which removed the husks from the ears, and in the same process cut the husks and the stalks and the blades into fodder, the power of the machine being supplied by a steam engine.

Then came the shelling of the corn, which is one of the marvels of the changes that have been wrought by machines. In this case the machine operated by steam shelled 1 bushel of corn per minute, while in the old way the labor of one man was required for 100 minutes to do the same work.

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SAVING IN THE COST OF PRODUCING CROPS

The potential saving in the cost of human labor on account of improved implements, machines, and processes at the rate per bushel or ton, as the case may be, has been computed for seven of the principal crops of 1899; the comparison is

But more, even, than the ingenuity of inventors and manufacturers has been required to give to agricultural machinery the wide introduction and the marvelously successful applications it has had in the cultivation of our staple crops east and west. "Experienced mechanicians," says Professor Hearn, "assert that, notwithstanding the progress of machinery in agriculture, there is probably as much sound, practical, labor-saving invention and machinery unused as there is used; and that it is unused solely in consequence of the ignorance and incompetency of the work people." This remark, which is perfectly true of England, and the force of which would have to be multiplied fourfold in application to the peasantry of France or Austria, utterly fails of significance if applied to the United States. It is because mechanical insight and aptitude, in the degree respecting which the term "mechanical genius" may properly be used, are found throughout the mass of the American people, that these products of invention and skill have been made of service on petty farms all over our land, and in the most remote districts wherever the divine rage of the peddler has carried him. Lack of mechanical insight and aptitude, in the full degree requisite for the economical use and care of delicate and complicated

between the old-time methods of production, in which hand labor was assisted only by the comparatively rude and inefficient implements of the day, and those of the present time, when hand labor has not only the assistance of highly efficient and perfected implements and machines, but has been considerably displaced by them. The saving in the cost of human labor in cents, per unit of product, permits a very forcible statement of its equivalent in money by means of a computation consisting of the multiplication of the saving per unit into the crop of 1899. The result expresses the potential labor saving in the production of seven crops of that year, and is not an aggregate of the saving of human labor in the cost of producing the crops for all of the years between the earlier and the later ones, during which time this economizing and displacement of human labor has taken place. In the case of the crop of corn, the money measure of the saving of human labor required to produce it in 1899 in the most available economic manner, as compared with its production in the old-time manner, was $523,276,642; wheat, $79,194,867; oats, $52,866,200; rye, $1,408,950; barley, $7,323,480; white potatoes, $7,366,820; hay, $10,034,868.

The total potential saving in the cost of human labor for these seven crops of 1899, owing to the possible utilization of the implements, machines, and methods of the present time, in place of the old-time manner of production, reaches the stupendous amount of $681,471,827 for this one year. — Ed.

machinery, is almost unknown among our native northern people. Not one in ten but has the mechanical sense and skill necessary for the purpose.

But it has not been through the invention and wide application of agricultural machinery alone that the peculiar and extraordinary mechanical genius of our people has increased our national capacity for agricultural production. In what we may call the daily commonplace use of this faculty, throughout what may be termed the pioneer period, and, in a diminishing degree, through each successive stage of settlement and industrial development, the American farmer has derived from this source an advantage beyond estimation in dealing with the perpetually varying exigencies of the occupation and cultivation of the soil.

Perhaps we cannot better illustrate this than by referring to a recent exhibition of our national activity in another field.

When the War of the Rebellion broke out no one supposed that the American armies, hastily raised and commanded by men tried only in civil affairs, were to give lessons to the engineers of Europe. Yet, after our war had been going on about two years, it came to be apprehended that a new force had been introduced into warfare, causing an almost total revolution in field operations. The soldiers of the Union and Confederate armies, left almost to themselves in the matter, had gradually but rapidly developed a system of field intrenchments the like of which had never been executed by any army or conceived by any engineer. Not only between night and morning, but often in the course of four or even three hours, was it found possible for infantry to cover their front with works adequate to a complete protection from musketry and from the casual fire of field guns.

This system of intrenchment was a spontaneous, original creation on the part of many different bodies of troops. The officers who served most uninterruptedly through the campaigns of 1862 and 1863 could hardly presume to say when and where it first took distinct and recognizable shape. Those who have followed the course of military opinion in Europe and are familiar with the history of recent wars there, know how greatly the

theory and practice of field operations have been changed as the result of the introduction of the American system of rapid, rough-and-ready intrenchment. The works along the Rapidan, the Pamunkey, or the Appomattox were contemptible enough, viewed as finished products, irrespective of the time expended; but in the fact that such works could be thrown up in the interval between the arrival of the head and of the rear of a column, or in half a night, lay possibilities of almost infinite consequence to the strategist.

Now just what, in spirit, our soldiers were doing in 1863, 1864, and 1865 our farmers had been doing all through the pioneer period of every new state, and though in a lower degree, in meeting the later and less pressing exigencies of agricultural extension and improvement. The way in which the pioneer of New England birth or blood, stopping his cattle in a wilderness, miles from any neighbor, and tumbling ax and spade, bundles and babies out upon unbroken ground, which he was to make his home, set about the task of providing shelter for his children and his animals, clearing the ground and getting a first crop out of the soil, were not admirable merely as an exhibition of courage, faith, and enterprise; but, if we look at the results accomplished in the light of the time and labor expended, it constitutes a triumph of mechanical, we might say of engineering, genius.

The simple record of the first five years on a pioneer farm on the Western Reserve of Ohio, were it possible to set it forth in such a way that one could see that life in the wilderness lived over again, that work in the wilderness done over again, would produce upon a mind capable of appreciating the highest human achievements a stronger impression of the intellectual power and originality of the American people than all the literature we have accumulated since Joel Barlow wrote his "Vision of Columbus."

Sixth. When we ask what has been done chemically to promote American agriculture, we reach at once the most characteristic differences between our cultivation of the soil and that prevailing in older countries; and we have, at the same time, the explanation of the contemptuous manner in which our

agriculture is almost universally spoken of by European writers. Did I say contemptuous? The word "indignant" would often better express the feeling aroused in these writers by the contemplation of our dealing with the soil, which, from their point of view, they cannot but regard as wasteful, wanton earth butchery. "In perusing the volumes of Messrs. Parkinson, Faux, Fearon, and others," says Hinton, in his "History of the United States," "some hundred pages of invective occur because the Americans will persist in taking up fresh land instead of the more costly process of manuring a worn-out soil — will raise extensive crops instead of highly cultivating and beautifying a small space."

A few British tourists, indeed, notably Professor Johnston and Mr. James Caird, have shown a somewhat juster appreciation of American agriculture; but even these have given only a qualified approval of our method of dealing with the soil, and have fallen ludicrously short of the truth in attempting to fix the limit of time during which this policy could be maintained.

Johnston, one of the best writers of his time on agricultural chemistry, publishing his "Notes on North America" in 1851, expressed his belief that the exportable wheat of the continent, as a whole, was "already a diminishing quantity." In the light of to-day the following reads somewhat strangely:

> It is fair and reasonable, therefore, I think, to conclude, until we have better data, that the wheat-exporting capabilities of the United States are not so great as they have by many in Great Britain hitherto been supposed; that they have been overstated on the spot, and that our wheat growers at home have been unduly alarmed by these distant thunders, the supposed prelude of an imaginary torrent of American wheat, which was to overwhelm everything in Great Britain, involving farmers and landlords in one common ruin.

Undue alarm; distant thunders; supposed prelude; imaginary torrent! Nothing so good as that had been said since the profane scoffer told the son of Lamech to go along with his old ark; it was n't going to be much of a shower after all.

What, then, has been this American way of dealing with the soil to which our English brethren have so strongly made objection?

The American people finding themselves on a continent containing an almost limitless breadth of arable land of fair average fertility, having little accumulated capital and many urgent occasions for every unit of labor power they could exert, have elected — and in so doing they are, I make bold to say, fully justified, on sound economical principles — to regard the land as practically of no value and labor as of high value; have, in pursuance of this theory of the case, systematically cropped their fields, on the principle of obtaining the largest crops with the least expenditure of labor, limiting their improvements to what was required for the immediate purpose specified, and caring little about returning to the soil any equivalent for the properties taken from it by the crops of each successive year. What has been returned has been only the manure generated incidentally to the support of the live stock needed to work the farm. In that which is for the time the great wheat and corn region of the United States the fields are, as a rule, cropped continuously, without fertilization, year after year, decade after decade, until their fertility sensibly declines.

Decline under this regimen it must, sooner or later, later or sooner, according to the crop and according to the degree of original strength in the soil. Resort must then be had to new fields of virgin freshness, which with us in the United States has always meant "the West." When Professor Wharton wrote, the granary of the continent had already moved from the flats of the lower St. Lawrence to the Mississippi valley, the north-and-south line which divided the wheat product of the United States into two equal parts being approximately the line of the 82d meridian. In 1860 it was the 85th; in 1870, the 88th; in 1880, the 89th.

Meanwhile what becomes of the regions over which this shadow of partial exhaustion passes, like an eclipse, in its westward movement? The answer is to be read in the condition of New England to-day. A part of the agricultural population is maintained by raising upon limited soils the smaller crops, — garden vegetables and orchard fruits, — and producing butter, milk, poultry, and eggs for the supply of the cities and

manufacturing towns which had their origin in the flourishing days of agriculture, which have grown with the age of the communities in which they are planted, and which, having been well founded when the decadence of agriculture begins, flourish the more on this account, inasmuch as a second part of the agricultural population, not choosing to follow the westward movement of the grain culture, are ready with their rising sons and daughters to enter the mill and factory.

Still another part of the agricultural population gradually becomes occupied in the higher and more careful culture of the cereal crops on the better portion of the former breadth of arable land, the less eligible fields being allowed to spring up in brush and wood; deeper plowing and better drainage are resorted to; fertilizers are now employed to bring up and to keep up the pristine fertility of the soil.

And thus begins the serious systematic agriculture of an old state. Something is done in wheat, but not much. New York raised thirteen million bushels in 1850; thirty years later, when her population had increased 70 per cent, she raises thirteen million bushels. Pennsylvania raised fifteen and a half million bushels in 1850, with a population of two and a quarter millions; in 1880, with four and a half million inhabitants, she raises nineteen and a half million bushels. New Jersey raised one million six hundred thousand bushels then; she raises one million nine hundred thousand now.[1]

More is done in corn, that magnificent and most prolific cereal; more still in buckwheat, barley, oats, and rye. Pennsylvania, though the tenth state in wheat production, stands first of all the Union in rye, second in buckwheat, and third in oats; New York, the same New York whose Mohawk and Genesee valleys were a proverb through the world forty years ago, is but the thirteenth state in wheat, but is first in buckwheat, second in barley, and third in rye.[2]

[1] In 1899 New York produced but 10,412,675 bushels of wheat, and New Jersey but 1,902,590. — Ed.

[2] In 1899 New York stood second in buckwheat, seventh in barley, and third in rye. — Ed.

It is in the way described that Americans have dealt with the soil opened to them by treaty or by purchase. And I have no hesitation in saying that posterity will decide, first, that it was both economically justified and politically fortunate that this should be done; and, secondly, that what has been done was accomplished with singular enterprise, prudence, patience, intelligence, and skill.

It will appear, from what has been said under the preceding titles, that I entertain a somewhat exalted opinion concerning American agriculture. Indeed I do. To me the achievements of those who in this new land have dealt with the soil, under the conditions so hurriedly and imperfectly recited, surpass the achievements of mankind in any other field of economic effort. With the labor power and capital power which we have had to expend during the past one hundred years, to have taken from the ground these hundreds, these thousands of millions of tons of food, fibers, and fuel for man's uses, leaving the soil no more exhausted than we find it to-day; and, meantime, to have built up, out of the current profits of this primitive agriculture, such a stupendous fund of permanent improvements, in provision for future needs and in preparation for a more advanced industry and a higher tillage, — this certainly seems to be not only beyond the achievement, but beyond the power, of any other race of men.

4. The Future of American Agriculture[1]

Faults of the Past

The mighty production of the farm for one third of a century has come out of an agriculture having many faults. In a large degree there has been one-crop farming; crop rotation, as practiced, has often been too short and unwise; the grasses and leguminous forage crops have been neglected, domestic animals have not sufficiently entered into the farm economy, and many dairy cows have been kept at a loss. The fertilizers made on

[1] From the report of Honorable James Wilson, Secretary of Agriculture, for the year 1906.

the farm have been regarded as a nuisance in some regions; they have been wasted and misapplied by many farmers;[1] humus has not been plowed into the ground as generally as it should have been; and in many a place the unprotected soil has been washed into the streams.

[1] In the Yearbook of the Department of Agriculture for 1902 Mr. George K. Holmes presents the following facts concerning the use of fertilizers:

There are still extensive regions in the United States where barn manure is considered a farm nuisance. In a county of Oregon the neighbor is welcome to haul away this manure, and that neighbor is likely to be a thrifty German with a large garden; in other Oregon counties the manure is burned. In a California county the manure is dumped into ravines; it goes to the creek in Oklahoma; it is hauled to a hole in the ground or put on one side of the field in Kansas; South Dakota farmers burn it to be rid of it, and sometimes burn it for fuel. In North Dakota farmers haul barn manure to piles and leave it there until it disappears; farmers in Missouri deposit it by the roadside, and in Idaho scrapers are used, and it is "often seen piled as high as a barn."

In many counties between the Mississippi river and the Pacific ocean farmers not only find barn manure a nuisance, but they have a grievance against it, claiming in South Dakota that it produces dog fennel, elsewhere that it produces other weeds, and in various counties that it has such an effect of "poisoning" the soil that farmers are afraid of it. The owner of a large California wheat ranch required a tenant last year to spread the barn manure of the ranch upon the wheat land, but the tenant, after doing so, set fire to the stubble and burned the manure.

In semi-arid regions barn manure needs to be used cautiously on unirrigated land; in the wheat lands of California it is more or less visible for four or five years after its application to the land. The practice of two hundred years ago survives in some parts of the South: cattle are penned upon the land to increase its fertility, and the pen is shifted as the owner desires.

In a large portion of the North Central States barn manure is removed to prevent accumulation and deposited upon the fields throughout the winter, to be plowed under in the spring. In the East it is allowed to accumulate until spring, when it is deposited upon the land just before plowing. The use of this fertilizer for top-dressing grass land is very common throughout the principal portion of the United States wherever it is used in considerable quantities.

Barn manure is more generally applied to corn than to any other crop, although a liberal application of it is made to tobacco, potatoes, and vegetables. Commercial fertilizer is liberally used in cotton production, in the more intensive agriculture of fruit and vegetable raising, and in growing small grains, to which it is applied with a seeder at time of seeding. The use of barn manure is greatest in the East, while commercial fertilizers have the greatest use in the cotton belt. The use of any kind of barn or commercial fertilizer is more and more sporadic westward from Indiana, and commercial fertilizer is hardly anywhere seen west of the Mississippi river except on vegetable and fruit farms. — Ed.

Economic Justification

This, in few words, is the historic story of agriculture in a new country; yet the course of agriculture in this country, bad as it may seem in its unscientific aspect, has had large economic justification. While pioneers, poor and in debt, are establishing themselves they have no capital, even if they have the knowledge with which to carry on agriculture to the satisfaction of the critic. They must have buildings, machinery, and live stock, even at the expense of the soil.

Millions upon millions of acres of fresh land have been coming into production faster than domestic consumption has required, and, at times, beyond the takings of importing countries. For many years the farmer was threatened with forty-cent wheat, twenty-cent corn, and five-cent cotton, and at times he was face to face with the hard conditions implied in these destructive prices. A more scientific agriculture would have raised wheat that no one wanted to eat, corn to store on the farm and perhaps eventually to be used for fuel, and cotton not worth the picking.

Larger Production Indicated

So it has happened, with reason, that the production per acre has been low; but there is no likelihood that low production is fixed and that the farmer must continue his extensive system. When consumption demands and when prices sustain, the farmer will respond. The doors of knowledge and example are opening wider to him.

There is abundant information concerning crop rotation,[1] the dependence of high production upon the domestic animals, concerning grasses, clover, and alfalfa, and concerning the mixing

[1] In the Yearbook of the Department of Agriculture for 1902 Mr. George K. Holmes gives the following account of the present practice in the rotation of crops:

Little systematic rotation of crops is found in this country. One-crop farming is still practiced in some parts, as corn on bottom land or cotton in the South, corn or wheat in the North Central States and the Southwest, and wheat on the Pacific coast. The constant cropping of the "corn bottoms" of the South and of the North Central States is sustained to some extent by the annual deposit

of vegetable matter with the soil. Systems of farm management and soil treatment have assumed greater importance in their effect upon production; and there is the breeding of plants, which alone can multiply production so as to glut the market.

Multiplication of the Cotton Crop

If there were need to do so, the cotton farmer and planter could double the present crop of two fifths of a bale per acre, and the feat would need nothing more than demonstrated and well-understood principles of farm management. It would be no work of magic to multiply the production of cotton per acre by three and get a bale and a quarter; and, besides this, the

from freshets. The cotton land receives commercial fertilizer, and much of it is rested every few years, but is in a low condition of fertility. The continuity of wheat or corn in the North Central and Pacific States is broken by complete rest in many counties, and the soil is becoming less productive. Rest for the soil is not a common practice in the North Central States; the extension of crop rotation is preventing this.

Haphazard is a mild word to describe the impression given by the reports of correspondents with regard to the rotation of crops in many counties and parts of counties of the United States. Although there may be an annual change of crop on the same land, this change is so uncertain, so unsystematic, that at first it seems impossible to establish order out of the chaotic mass of particulars. Some fundamentals may be discerned, however, in a broadly general sense.

Throughout the region north of the cotton belt there is a three-crop rotation which may be regarded as a system with innumerable variations. These crops are corn, small grain (wheat, oats, barley, rye), and grass or legumes; and the period covered by the rotation in some of its variations is commonly four or five years and not infrequently extends to eight or ten or more years, the length of the period depending mostly upon the ability of the grass or legumes to remain productive. Sooner or later most of the tillable land that is not bottom land or is not devoted to one crop, fruit or vegetables, passes through this rotation, but often with interruptions or the admixture of other crops in the effort to adapt the products to markets, prices, soil, weather, and the special or general objects of farming.

In some regions which produce considerable tobacco, potatoes, or beans, a portion of the land that would otherwise be given to corn may be given to one of these crops in this general rotation.

This fundamental rotation north of the cotton belt will be better understood by noticing the variations presented in the list of leading rotations contained in this paper.

In the cotton belt, as far as any systematic rotation of crops is discoverable, it is cotton and corn, but this is subject to the repetition of cotton because of larger area than corn, to the resting of the soil for a year, to the inclusion of

planter has more than three times the present actual acreage in cotton readily available and awaiting his use. More than the present area of cotton can thus be grown in a three-year crop rotation when the needs of the world demand it.

Increase of Corn

In accordance with principles demonstrated, known, and applicable, hints of which have been given, the corn crop per acre can be increased by one half within a quarter of a century, and without any pretense that the limit has been reached. No wizard's services are needed for this, but just education.

More Wheat per Acre

The same statement is applicable to wheat. There is no sensible reason why half as much more wheat may not be had from an acre within less than a generation of time. It is only a question of knowledge, of education, of cultural system, and of farm management, all of which learning is and will be at the service of the farmer as he needs it.

cowpeas, and of various small crops of sorghum, oats, sweet potatoes, etc., in the course of several years, during which the primary rotation may have occurred two or three times. Variations of the primary cotton rotation will be observed in the subsequent list of leading rotations.

In the arid and semi-arid regions, which comprise that part of the country lying west of the one hundredth meridian, except a border on the Pacific ocean, the crop rotation, outside of vegetable and fruit production, tends to maintain the growth of alfalfa as long as possible. In the reseeding year wheat or other small grain is sown. There is, however, considerable resting of land throughout this entire region as a poor substitute for renewing the fertility of the land by the use of alfalfa, for alfalfa is not grown where grain is the chief product. In western Oregon and Washington, where the rainfall permits the introduction of grasses, the rotation chiefly includes only small grains and grasses, and in some counties only the small grains.

For California it is impossible to arrive at a fundamental crop rotation on account of radical differences in soil, water supply, and climate. The reports received show the practices to be almost as numerous as the counties, and indeed some counties have several practices in different parts. With regard to wheat and barley the general practice is that the land rests every second or third year, in which it produces nothing but weeds and wild oats. Some Pacific Coast rotations are given in the list of leading rotations. — Ed.

Gain in Other Crops

Equally feasible is a 50-per cent increase in the crops per acre of oats, barley, rye, and buckwheat. Potatoes, instead of growing less than one hundred bushels per acre, should double their production. Wherever only six hundred to eight hundred pounds of tobacco are got from an acre, three fourths of a ton is the prospect.

Fruits, berries, and vegetables have a future too large to estimate. The cannery and the railway fast freight and refrigerator car have overcome obstacles of latitude, of longitude, and of season, and there is every indication that the farmer can supply any possible demand for these foods at home or abroad.

Animal Products

Farmers will learn how to feed more prolific breeds and strains of swine than the ones which they are now chiefly raising, and thus will pork and its products be increased per individual of the permanent stock of hogs. One fourth of the dairy cows of the country do not pay for their feed, and more than half of them do not return any profit; in proportion as the dairyman weighs the milk of each cow and applies the Babcock test will he increase the supply of milk, butter, and cheese. It is merely a matter of education.

Poultry is one of the steady and helpful sources of farm income. Movements are already on foot which may be expected to increase the egg production per hen by at least a dozen per year within a generation; and there are poultrymen, who are not enthusiasts, who foretell double that increase. If the hens of this year had each laid a dozen eggs more than they did, the increased value of this product would have been possibly fifty million dollars.

A Matter of Education

The farmer will not fail the nation if the nation does not fail the farmer. He will need education to know the powers of the soil which are now hidden from him. The prospective yearly

expenditure of ten million dollars for educational and research work by nation and states, with such increases as may come from time to time, must have enormous effects. There may be agricultural schools for the small children and agricultural high schools for the larger ones, and their education will be continued in the colleges.[1]

The work of the Department of Agriculture has already had results which are valued at hundreds of millions of dollars annually, and yet the department feels that it has barely crossed the threshold of its mission of discovery and education. Coöperating to the same ends are sixty experiment stations in fifty-one states and territories, the sixty-three agricultural colleges, thousands of farmers' institute meetings yearly, many excellent agricultural periodical publications, and new instructive books. Then there is a new line of work which is so productive of results that it is constantly extending, and that is the demonstration farm, — the encouragement of individual farmers to change their agriculture so as to multiply their yields and their profits, and thus afford object lessons to other farmers.

Thus it appears that forces are now at work which will very considerably increase the production of the farms within a generation, and which promise to continue the increase

[1] The following facts concerning agricultural education were presented in the Yearbook of the Department of Agriculture for 1902 :

It may be justly claimed that the United States has in its National Department of Agriculture and the state agricultural experiment stations the most complete system of agricultural research in the world, and that the results obtained through these agencies have had a wider application and have influenced to a greater extent the masses of farmers than has been the case in any other country. Agricultural experiment stations are now in operation in every state and territory of the United States, including Alaska, Hawaii, and Porto Rico, and steps have been taken under government auspices to establish agencies for agricultural investigation in the Philippine Islands. There are sixty such stations, employing nearly a thousand trained scientific and practical men in their work.

The annual income of these stations in 1902 was $1,328,847.37, of which sum $720,000 came from the federal government and $608,847.37 from state appropriations and other sources. During the fourteen years of their existence as a national enterprise there has been expended in their maintenance about $14,000,000, of which $10,000,000 came from the national Treasury and about $4,000,000 from state sources. — Ed.

indefinitely. He who would write the last chapter of the progress of the agriculture of this country must await the procession of the centuries.

Opening of a New Era

The farmer is financially in a position now to do what he could not have done previous to the recent years of his prosperity. National welfare has been promoted by few revolutions in agricultural economics to the extent that it has been and will be promoted by ten-cent cotton. The greater part of the cotton planters are out of their former bondage to future maintenance, and they are paying no enormous rates of interest for advancements, — rates which were estimated fifteen years ago to average 40 per cent a year.

In the Middle West the prosperity of the farmers during the last half dozen years and more has advanced in such mass and with such speed that no parallel can be found in the economic history of agriculture. One of the great changes that have come over this region is the conversion of a million agricultural debtors, paying high rates of interest and finding great difficulty in procuring the wherewithal out of prices much too low, into financially independent farmers, debt free and begging the banks to receive their savings at as small a rate of interest as 2 per cent.

Power of the Farmers' New Capital

Farmers are using their new capital to abolish the waste places of the land. The river is leveed and alluvial bottoms subject to overflow become worth hundreds of dollars per acre for vegetables; a marsh is drained by ditches and tiles, and celery makes it the most valuable land in the county; semi-arid land is constantly cultivated so as to make a mulch of finely pulverized earth on the surface, and the crops that it will grow make the farmer prosperous; durum wheat or alfalfa is introduced and again the semi-arid wastes are made to do the will of the cultivator; leguminous plants give humus and nitrogen

to the sandy waste, to the use and profit of the farmer; the unused rocky, stony field or mountain side, offensive both to the economic and to the æsthetic eye, blossoms with the apple, the peach, the pear, and the plum, and adds to the evidences that every square foot of the land may be made productive unless it is arid; and even then irrigation works, as far as water is available, swell the evidence. Along all of these lines of production farmers are using their newly acquired capital and are progressing as never before in their prosperity.

Formerly there was an abundance of farm labor and a dearth of farming capital; now these conditions are reversed, and labor is scarce and capital abundant. Notwithstanding the farmers' inability to do some things for want of labor, the new situation is a great improvement upon the old one. The farmer can now employ every labor-saving device and thus reduce both the labor and the cost of production; he can raise his land to a higher state of fertility than can be made by chemical fertilizers alone, because he can advance the needed capital for permanent soil improvement and is in a position to await results; he can produce things that require years for the first crop, as in the case of fruits; he can provide such capital as is needed to distribute his products, and thus coöperation is open to him to a greater extent than ever before; he can secure a better education for his children to the end, among other things, that they may do better with the old farm than he did.

CHAPTER V

THE ORGANIZATION OF PRODUCTION BEFORE AND AFTER THE INDUSTRIAL REVOLUTION

1. Adam Smith's Criticism of the Policy of the Gilds [1]

The policy of Europe occasions a very important inequality in the whole of the advantages and disadvantages of the different employments of labour and stock, by restraining the competition to a smaller number than might otherwise be disposed to enter into them.[2]

The exclusive privileges of corporations are the principal means it makes use of for this purpose.

The exclusive privilege of an incorporated trade necessarily restrains the competition, in the town where it is established, to those who are free of the trade. To have served an apprenticeship in the town, under a master properly qualified, is commonly the necessary requisite for obtaining this freedom. The bye-laws of the corporation regulate sometimes the number of apprentices which any master is allowed to have, and almost always the number of years which each apprentice is obliged to serve. The intention of both regulations is to restrain the competition to a much smaller number than might otherwise be disposed to enter into the trade. The limitation of the number of apprentices restrains it directly. A long term of apprenticeship restrains it indirectly, but as effectually, by increasing the expense of education.

In Sheffield no master cutler can have more than one apprentice at a time, by a bye-law of the corporation. In Norfolk and

[1] Wealth of Nations, Bk. I, chap. x, Part II.

[2] Smith is discussing in this chapter "Wages and Profit in the Different Employments of Labor and Stock." He treats of the gilds, accordingly, as one of the causes which produce differences in the wages and profits derived from different employments. — Ed.

Norwich no master weaver can have more than two apprentices under pain of forfeiting five pounds a month to the king. No master hatter can have more than two apprentices anywhere in England, or in the English plantations, under pain of forfeiting five pounds a month, half to the king, and half to him who shall sue in any court of record. Both these regulations, though they have been confirmed by a public law of the kingdom, are evidently dictated by the same corporation spirit which enacted the bye-law of Sheffield. The silk weavers in London had scarce been incorporated a year, when they enacted a bye-law, restraining any master from having more than two apprentices at a time. It required a particular act of parliament to rescind this bye-law.

Seven years seem anciently to have been, all over Europe, the usual term established for the duration of apprenticeships in the greater part of incorporated trades. All such incorporations were anciently called universities; which indeed is the proper Latin name for any incorporation whatever. The university of smiths, the university of tailors, etc., are expressions which we commonly meet with in the old charters of ancient towns. When those particular incorporations which are now peculiarly called universities were first established, the term of years which it was necessary to study, in order to obtain the degree of master of arts, appears evidently to have been copied from the term of apprenticeship in common trades, of which the incorporations were much more ancient. As to have wrought 7 years under a master properly qualified was necessary, in order to entitle any person to become a master, and to have himself apprentices in a common trade; so to have studied 7 years under a master properly qualified, was necessary to entitle him to become a master, teacher, or doctor (words anciently synonymous) in the liberal arts, and to have scholars or apprentices (words originally synonymous) to study under him.

By the 5th of Elizabeth, commonly called the Statute of Apprenticeship, it was enacted that no person should for the future exercise any trade, craft, or mystery at that time exercised in England, unless he had previously served to it an

apprenticeship of seven years at least; and what before had been the bye-law of many particular corporations, became in England the general and public law of all trades carried on in market towns. For though the words of the statute are very general, and seem plainly to include the whole kingdom, by interpretation its operation has been limited to market towns, it having been held that in country villages a person may exercise several different trades, though he has not served a seven years' apprenticeship to each, they being necessary for the conveniency of the inhabitants, and the number of people frequently not being sufficient to supply each with a particular set of hands.

By a strict interpretation of the words, too, the operation of this statute has been limited to those trades which were established in England before the 5th of Elizabeth, and has never been extended to such as have been introduced since that time. This limitation has given occasion to several distinctions which, considered as rules of police, appear as foolish as can well be imagined. It has been adjudged, for example, that a coachmaker can neither himself make, nor employ journeymen to make, his coach-wheels, but must buy them of a master wheelwright; this latter trade having been exercised in England before the 5th of Elizabeth. But a wheelwright, though he has never served an apprenticeship to a coachmaker, may either himself make or employ journeymen to make coaches, the trade of a coachmaker not being within the statute, because not exercised in England at the time when it was made. The manufactures of Manchester, Birmingham, and Wolverhampton, are many of them, upon this account, not within the statute; not having been exercised in England before the 5th of Elizabeth.

In France the duration of apprenticeships is different in different towns and in different trades. In Paris five years is the term required in a great number; but before any person can be qualified to exercise the trade as a master, he must, in many of them, serve five years more as a journeyman. During this latter term he is called the companion of his master, and the term itself is called his companionship.

In Scotland there is no general law which regulates universally the duration of apprenticeships. The term is different in different corporations. Where it is long, a part of it may generally be redeemed by paying a small fine. In most towns, too, a very small fine is sufficient to purchase the freedom of any corporation. The weavers of linen and hempen cloth, the principal manufactures of the country, as well as all other artificers subservient to them — wheelmakers, reelmakers, etc. — may exercise their trades in any town corporate without paying any fine. In all towns corporate all persons are free to sell butcher's meat upon any lawful day of the week. Three years is in Scotland a term of apprenticeship in some very nice trades ; and I know of no country in Europe in which corporation laws are so little oppressive.

The property which every man has in his own labour, as it is the original foundation of all other property, so it is the most sacred and inviolable. The patrimony of a poor man lies in the strength and dexterity of his hands; and to hinder him from employing this strength and dexterity in what manner he thinks proper without injury to his neighbour, is a plain violation of this most sacred property. It is a manifest encroachment upon the just liberty both of the workman and of those who might be disposed to employ him. As it hinders the one from working at what he thinks proper, so it hinders the others from employing whom they think proper. To judge whether he is fit to be employed, may surely be trusted to the discretion of the employers. The affected anxiety of the law-giver lest they should employ an improper person, is evidently as impertinent as it is oppressive.

The institution of long apprenticeships can give no security that insufficient workmanship shall not frequently be exposed to public sale. When this is done it is generally the effect of fraud, and not of inability ; and the longest apprenticeship can give no security against fraud. Quite different regulations are necessary to prevent this abuse. The sterling mark on plate, and the stamps on linen and woollen cloth, give the purchaser much greater security than any statute of apprenticeship.

He generally looks at these, but never thinks it worth while to inquire whether the workmen had served a seven years' apprenticeship.

The institution of long apprenticeships has no tendency to form young people to industry. A journeyman who works by the piece is likely to be industrious, because he derives a benefit from every exertion of his industry. An apprentice is likely to be idle, and almost always is so, because he has no immediate interest to be otherwise. In the inferior employments, the sweets of labour consist altogether in the recompense of labour. They who are soonest in a condition to enjoy the sweets of it are likely soonest to conceive a relish for it, and to acquire the early habit of industry. A young man naturally conceives an aversion to labour when for a long time he receives no benefit from it. The boys who are put out apprentices from public charities are generally bound for more than the usual number of years, and they generally turn out very idle and worthless.

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Long apprenticeships are altogether unnecessary. The arts, which are much superior to common trades, such as those of making clocks and watches, contain no such mystery as to require a long course of instruction. The first invention of such beautiful machines, indeed, and even that of some of the instruments employed in making them, must, no doubt, have been the work of deep thought and long time, and may justly be considered as among the happiest efforts of human ingenuity. But when both have fairly been invented, and are well understood, to explain to any young man, in the completest manner, how to apply the instruments and how to construct the machines, cannot well require more than the lessons of a few weeks : perhaps those of a few days might be sufficient. In the common mechanic trades, those of a few days might certainly be sufficient. The dexterity of hand, indeed, even in common trades, cannot be acquired without much practice and experience. But a young man would practise with much more diligence and attention if from the beginning he wrought as a journeyman, being paid in proportion to the little work which he could execute, and

paying in his turn for the materials which he might sometimes spoil through awkwardness and inexperience. His education would generally in this way be more effectual, and always less tedious and expensive. The master, indeed, would be a loser. He would lose all the wages of the apprenticeship, which he now saves for seven years together. In the end, perhaps, the apprentice himself would be a loser. In a trade so easily learnt he would have more competitors, and his wages, when he came to be a complete workman, would be much less than at present. The same increase of competition would reduce the profits of the masters as well as the wages of the workmen. The trades, the crafts, the mysteries, would all be losers. But the public would be a gainer, the work of all artificers coming in this way much cheaper to market.

It is to prevent this reduction of price, and consequently of wages and profit, by restraining that free competition which would most certainly occasion it, that all corporations, and the greater part of corporation laws, have been established. In order to erect a corporation, no other authority in ancient times was requisite in many parts of Europe but that of the town corporate in which it was established. In England, indeed, a charter from the king was likewise necessary. But this prerogative of the crown seems to have been reserved rather for extorting money from the subject than for the defence of the common liberty against such oppressive monopolies. Upon paying a fine to the king, the charter seems generally to have been readily granted ; and when any particular class of artificers or traders thought proper to act as a corporation without a charter, such adulterine gilds, as they were called, were not always disfranchised upon that account, but obliged to fine annually to the king for permission to exercise their usurped privileges. The immediate inspection of all corporations, and of the bye-laws which they might think proper to enact for their own government, belonged to the town corporate in which they were established ; and whatever discipline was exercised over them proceeded commonly, not from the king, but from that greater incorporation of which those subordinate ones were only parts or members.

The government of towns corporate was altogether in the hands of traders and artificers; and it was the manifest interest of every particular class of them to prevent the market from being overstocked, as they commonly express it, with their own particular species of industry; which is in reality to keep it always understocked. Each class was eager to establish regulations proper for this purpose, and, provided it was allowed to do so, was willing to consent that every other class should do the same. In consequence of such regulations, indeed, each class was obliged to buy the goods they had occasion for from every other within the town, somewhat dearer than they otherwise might have done. But in recompense, they were enabled to sell their own just as much dearer, so that so far it was as broad as long, as they say; and in the dealings of the different classes within the town with one another none of them were losers by these regulations. But in their dealings with the country they were all great gainers; and in these latter dealings consists the whole trade which supports and enriches every town.

Every town draws its whole subsistence, and all the materials of its industry, from the country. It pays for these chiefly in two ways: first, by sending back to the country a part of those materials wrought up and manufactured, in which case their price is augmented by the wages of the workmen, and the profits of their masters or immediate employers; secondly, by sending to it a part both of the rude and manufactured produce, either of other countries, or of distant parts of the same country, imported into the town, in which case, too, the original price of those goods is augmented by the wages of the carriers or sailors, and by the profits of the merchants who employ them. In what is gained upon the first of those two branches of commerce, consists the advantage which the town makes by its manufactures; in what is gained upon the second, the advantage of its inland and foreign trade. The wages of the workmen, and the profits of their different employers, make up the whole of what is gained upon both. Whatever regulations, therefore, tend to increase those wages and profits beyond what they otherwise would be, tend to enable the town to purchase, with a smaller

quantity of its labour, the produce of a greater quantity of the labour of the country. They give the traders and artificers in the town an advantage over the landlords, farmers, and labourers in the country, and break down the natural equality which would otherwise take place in the commerce which is carried on between them. The whole annual produce of the labour of the society is annually divided between those two different sets of people. By means of those regulations a greater share of it is given to the inhabitants of the town than would otherwise fall to them, and a less to those of the country.

The price which the town really pays for the provisions and materials annually imported into it, is the quantity of manufactures and other goods annually exported from it. The dearer the latter are sold, the cheaper the former are bought. The industry of the town becomes more, and that of the country less advantageous.

That the industry which is carried on in towns is, everywhere in Europe, more advantageous than that which is carried on in the country, without entering into any very nice computations, we may satisfy ourselves by one very simple and obvious observation. In every country in Europe we find, at least, a hundred people who have acquired great fortunes from small beginnings by trade and manufactures, the industry which properly belongs to towns, for one who has done so by that which properly belongs to the country, the raising of rude produce by the improvement and cultivation of land. Industry, therefore, must be better rewarded, the wages of labour and the profits of stock must evidently be greater in the one situation than in the other. But stock and labour naturally seek the most advantageous employment. They naturally, therefore, resort as much as they can to the town, and desert the country.

The inhabitants of a town, being collected into one place, can easily combine together. The most insignificant trades carried on in towns have accordingly, in some place or other, been incorporated ; and even where they have never been incorporated, yet the corporation spirit, the jealousy of strangers, the aversion to take apprentices, or to communicate the secret of their trade

generally prevail in them, and often teach them, by voluntary association, and agreements, to prevent that free competition which they cannot prohibit by bye-laws. The trades which employ but a small number of hands, run most easily into such combinations. Half a dozen wool-combers, perhaps, are necessary to keep 1000 spinners and weavers at work. By combining not to take apprentices, they engross the employment but reduce the whole manufacture into a sort of slavery to themselves, and raise the price of their labour much above what is due to the nature of their work.

The inhabitants of the country dispersed in distant places, cannot easily combine together. They have not only never been incorporated, but the corporation spirit never has prevailed among them. No apprenticeship has ever been thought necessary to qualify for husbandry, the great trade of the country. After what are called the fine arts, and the liberal professions, however, there is perhaps no trade which requires so great a variety of knowledge and experience. The innumerable volumes which have been written upon it in all languages may satisfy us, that among the wisest and most learned nations, it has never been regarded as a matter very easily understood. And from all those volumes we shall in vain attempt to collect that knowledge of its various and complicated operations which is commonly possessed even by the common farmer, how contemptuously soever the very contemptible authors of some of them may sometimes affect to speak of him. There is scarce any common mechanic trade, on the contrary, of which all the operations may not be as completely and distinctly explained in a pamphlet of a very few pages, as it is possible for words illustrated by figures to explain them. In the history of the arts now publishing by the French academy of sciences, several of them are actually explained in this manner. The direction of operations besides, which must be varied with every change of the weather as well as with many other accidents, requires much more judgment and discretion, than that of those which are always the same or very nearly the same.

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The superiority which the industry of the towns has everywhere in Europe over that of the country, is not altogether owing to corporations and corporation laws. It is supported by many other regulations. The high duties upon foreign manufactures and upon all goods imported by alien merchants, all tend to the same purpose. Corporation laws enable the inhabitants of towns to raise their prices without fearing to be undersold by the free competition of their own countrymen. Those other regulations secure them equally against that of foreigners. The enhancement of price occasioned by both is everywhere finally paid by the landlords, farmers, and labourers of the country, who have seldom opposed the establishment of such monopolies. They have commonly neither inclination nor fitness to enter into combinations ; and the clamour and sophistry of merchants and manufacturers easily persuade them that the private interest of a part, and of a subordinate part of the society, is the general interest of the whole.

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People of the same trade seldom meet together even for merriment and diversion, but the conversation ends in a conspiracy against the public, or on some contrivance to raise prices. It is impossible indeed to prevent such meetings by any law which either could be executed or would be consistent with liberty and justice. But though the law cannot hinder people of the same trade from sometimes assembling together, it ought to do nothing to facilitate such assemblies, much less to render them necessary. A regulation which obliges all those of the same trade in a particular town to enter their names and places of abode in a public register, facilitates such assemblies. It connects individuals who might never otherwise be known to one another, and gives every man of the trade a direction where to find every other man of it. A regulation which enables those of the same trade to tax themselves in order to provide for their poor, their sick, their widows and orphans, by giving them a common interest to manage, may also render such assemblies necessary. An incorporation not only renders them necessary, but makes the act of the majority binding upon the whole. In a free trade

an effectual combination cannot be established but by the unanimous consent of every single trader, and it cannot last any longer than every single trader continues of the same mind. The majority of a corporation cannot enact a bye-law with proper penalties, which will limit the competition more effectually, and more durably than any voluntary combination whatever. The pretence that corporations are necessary for the better government of the trade, is without any foundation. The real and effectual discipline which is exercised over a workman, is not that of his corporation, but that of his customers. It is the fear of losing their employment which restrains his frauds and corrects his negligence. An exclusive corporation necessarily weakens the force of this discipline. A particular set of workmen must then be employed, let them behave well or ill. It is upon this account, that in many large incorporated towns no tolerable workmen are to be found, even in some of the most necessary trades. If you would have your work tolerably executed, it must be done in the suburbs, where the workmen, having no exclusive privilege, have nothing but their character to depend upon, and you must then smuggle into the town as well as you can.

It is in this manner that the policy of Europe, by restraining the competition in some employments to a smaller number than would otherwise be disposed to enter into them, occasions a very important inequality in the whole of the advantages and disadvantages of the different employments of labour and stock.

2. Domestic Industry *vs.* the Factory System[1]

The 2d and 3d of Ph. and Mary is another of the acts comprised within the third class.[2] This statute, commonly called the Weavers Act, among other regulations limits the number of looms which persons residing in villages may keep in one house.

[1] This account of the organization of the English woolen industry in 1806 is taken from the report of a parliamentary committee. See Report from the Committee on the Woolen Manufacture of England, July 4, 1806.

[2] The class of acts referred to were those "controlling the making and selling of cloth." — Ed.

It is highly valued, and its repeal strongly opposed, by another very respectable class of petitioners. But in order that the House may enter more distinctly into the principles and reasonings which belong to this part of the subject, it may be expedient for your committee to state that there are three different modes of carrying on the woolen manufacture, — that of the master clothier of the west of England, the factory, and the domestic system.

In all the western counties as well as in the north there are factories, but the master clothier of the west of England buys his wool from the importer, if it be foreign, or in the fleece, or of the wool stapler, if it be of domestic growth; after which, in all the different processes through which it passes, he is under the necessity of employing as many distinct classes of persons; sometimes working in their own houses, sometimes in those of the master clothier, but none of them going out of their proper line. Each class of workmen, however, acquires great skill in performing its particular operation, and hence may have arisen the acknowledged excellence, and, till of late, superiority of the cloths of the west of England. It is, however, a remarkable fact, of which your committee has been assured by one of its own members, that previously to the introduction of machinery it was very common, and it is said sometimes to happen at this day, for the north countryman to come into the west of England, and in the clothing districts of that part of the kingdom, to purchase his wool, which he carries home; where, having worked it up into cloth, he brings it back again and sells it in its native district. This is supposed to arise from the northern clothier being at liberty to work himself, and employ his own family and others, in any way which his interest or convenience may suggest.

In the factory system the master manufacturers, who sometimes possess a very great capital, employ in one or more buildings or factories, under their own or their superintendent's inspection, a number of workmen, more or fewer according to the extent of their trade. This system, it is obvious, admits in practice of local variations. But both in the system of the

west-of-England clothier and in the factory system the work, generally speaking, is done by persons who have no property in the goods they manufacture, for in this consists the essential distinction between the two former systems and the domestic.

In the last-mentioned or domestic system, which is that of Yorkshire, the manufacture is conducted by a multitude of master manufacturers generally possessing a very small and scarcely ever any great extent of capital. They buy the wool of the dealer; and, in their own houses, assisted by their wives and children, and from two or three to six or seven journeymen, they dye it (when dyeing is necessary) and through all the different stages work it up into undressed cloth.[1]

Various processes, however, the chief of which were formerly done by hand under the manufacturer's own roof, are now

[1] The following description of the cloth trade of Halifax, a town in the West Riding of Yorkshire, was written by Daniel Defoe early in the eighteenth century (Tour of Great Britain, III, Letter III): "From *Blackstone Edge* to *Halifax* is eight Miles, and all the Way, except from *Sorby* to *Halifax*, is thus up Hill and down; so that, I suppose, we mounted up to the Clouds, and descended to the Water-level, about eight times in that little Part of the Journey.

But now I must observe to you, that after we had passed the second Hill, and come down into the Valley again, and so still the nearer we came to *Halifax*, we found the Houses thicker, and the Villages greater, in every Bottom; and not only so, but the Sides of the Hills, which were very steep every Way, were spread with Houses; for the Land being divided into small Inclosures, from two Acres to six or seven each, seldom more, every three or four Pieces of Land had an House belonging to them.

In short, after we had mounted the third Hill, we found the Country one continued Village, tho' every way mountainous, hardly an House standing out of a Speaking-distance from another; and as the Day cleared up, we could see at every House a Tenter, and on almost every Tenter a Piece of Cloth, Kersie, or Shalloon, which are the three Articles of this Country's Labour.

In the Course of our Road among the Houses, we found at every one of them a little Rill or Gutter of running Water; if the House was above the Road, it came from it, and crossed the Way to run to another; if the House was below us, it crossed us from some other distant House above it; and at every considerable House was a Manufactory, which not being able to be carried on without Water, these little Streams were so parted and guided by Gutters or Pipes, that not one of the Houses wanted its necessary Appendage of a Rivulet.

Again, as the Dying-houses, Scouring-shops, and Places where they use this Water, emit it tinged with the Drugs of the Dying-vat, and with the Oil, the Soap, the Tallow, and other Ingredients used by the Clothiers in Dressing and Scouring, &c. the Lands thro' which it passes, which otherwise would be exceeding barren, are enriched by it to a Degree beyond Imagination.

performed by machinery in public mills, as they are called, which work for hire. There are several such mills near every manufacturing village, so that the manufacturer, with little inconvenience or loss of time, carries thither his goods and fetches them back again when the process is completed. When it has attained to the state of undressed cloth he carries it on the market day to a public hall or market, where the merchants repair to purchase.

Several thousands of these small master manufacturers attend the market of Leeds, where there are three halls for the exposure and sale of their cloths; and there are other similar halls, where the same system of selling in public market prevails, at Bradford, Halifax, and Huddersfield. The halls consist of long walks or galleries, throughout the whole length of which the

Then, as every Clothier must necessarily keep one Horse, at least, to fetch home his Wool and his Provisions from the Market, to carry his Yarn to the Spinners, his Manufacture to the Fulling-mill, and, when finished, to the Market to be sold, and the like; so every one generally keeps a Cow or two for his Family. By this means, the small Pieces of inclosed Land about each House are occupied; and by being thus fed, are still farther improved from the Dung of the Cattle. As for Corn, they scarce sow enough to feed their Cocks and Hens.

Such, it seems, has been the Bounty of Nature to this Country, that two Things essential to Life, and more particularly to the Business followed here, are found in it, and in such a Situation as is not to be met with in any part of *England*, if in the World beside: I mean, Coals and running Water on the Tops of the highest Hills. I doubt not but there are both Springs and Coals lower in these Hills; but were they to fetch them thence, 't is probable the Pits would be too full of Water: 't is easy, however, to fetch them from the upper Pits, the Horses going light up, and coming down loaden. This Place then seems to have been designed by Providence for the very Purposes to which it is now allotted, for carrying on a Manufacture, which can no-where be so easily supplied with the Conveniences necessary for it. Nor is the Industry of the People wanting to second these Advantages. Tho' we met few People without Doors, yet within we saw the Houses full of lusty Fellows, some at the Dye-vat, some at the Loom, others dressing the Cloths; the Women and Children carding, or spinning; all employed from the youngest to the oldest; scarce anything above four Years old, but its Hands were sufficient for its own Support. Not a Beggar to be seen, not an idle Person, except here and there in an Almshouse, built for those that are antient and past working. The people in general live long; they enjoy a good Air; and under such Circumstances hard Labour is naturally attended with the Blessing of Health, if not Riches.

From this Account, you 'll easily imagine, that some of these remote Parts of the North are the most populous Places of *Great Britain*, *London* and its Neighbourhood excepted."

master manufacturers stand in a double row, each behind his own little division or stand, as it is termed, on which his goods are exposed to sale. In the interval between these rows the merchants pass along and make their purchases. At the end of an hour, on the ringing of a bell, the market closes, and such cloths as have been purchased are carried home to the merchants' houses; such goods as remain unsold continuing in the halls till they find a purchaser at some ensuing market. It should, however, be remarked that a practice has also obtained of late years, of merchants giving out samples to some manufacturer whom they approve, which goods are brought to the merchant directly, without ever coming into the halls. These, however, no less than the others, are manufactured by him in his own family. The greater merchants have their working room, or, as it is termed, their shop, in which their workmen, or, as they are termed, croppers, all work together. The goods which, as it has been already stated, are bought in the undressed state, here undergo various processes, till, being completely finished, they are sent away for the use of the consumer, either in the home or the foreign market, the merchants sending them abroad directly without the intervention of any other factor. Sometimes again the goods are dressed at a stated rate by dressers, who take them in for that purpose.

The greater part of the domestic clothiers live in villages and detached houses, covering the whole face of a district of from twenty to thirty miles in length, and from twelve to fifteen in breadth. Coal abounds throughout the whole of it, and the great proportion of the manufacturers occupy a little land, — from three to twelve or fifteen acres each. They often likewise keep a horse to carry their cloth to the fulling mill and the market.

Though the system which has been just described be that which has been generally established in the West Riding of Yorkshire, yet there have long been a few factories in the neighborhood of Halifax and Huddersfield; and four or five more, one however of which has been since discontinued, have been set on foot not many years ago in the neighborhood of

Leeds. These have for some time been objects of great jealousy to the domestic clothiers. The most serious apprehensions have been stated, by witnesses who have given their evidence before your committee in behalf of the domestic manufacturers, lest the factory system should gradually root out the domestic, and lest the independent little master manufacturer, who works on his own account, should sink into a journeyman working for hire. It is for the purpose of counteracting this supposed tendency of the factory system to increase, that a numerous class of petitioners wish, instead of repealing, to amend and enforce the act of Philip and Mary for restricting the number of looms to be worked in any one tenement; and with a similar view they wish to retain in force the 5th of Elizabeth, which enacts the system of apprenticeships. On this latter head your committee will have occasion to say more hereafter, but it seemed right just to notice the circumstance in this place.

Your committee cannot wonder that the domestic clothiers of Yorkshire are warmly attached to their accustomed mode of carrying on the manufacture: It is not merely that they are *accustomed* to it, — it obviously possesses many eminent advantages seldom found in a great manufacture.

It is one peculiar recommendation of the domestic system of manufacture that, as it has been expressly stated to your committee, a young man of good character can always obtain credit for as much wool as will enable him to set up as a little master manufacturer, and the public mills, which are now established in all parts of the clothing district, and which work for hire at an easy rate, enable him to command the use of very expensive and complicated machines, the construction and necessary repairs of which would require a considerable capital. Thus instances not unfrequently occur wherein men rise from low beginnings, if not to excessive wealth, yet to a situation of comfort and independence.

It is another advantage of the domestic system of Manufacture, and an advantage which is obviously not confined to the individuals who are engaged in it, but which, as well as other parts of this system, extends its benefits to the landholder, that

any sudden stoppage of a foreign market, any failure of a great house, or any other of those adverse shocks to which our foreign trade especially is liable, in its present extended state, has not the effect of throwing a great number of workmen out of employ, as it often does, when the stroke falls on the capital of a single individual. In the domestic system the loss is spread over a large superficies; it affects the whole body of the manufacturers; and though each little master be a sufferer, yet few if any feel the blow so severely as to be altogether ruined. Moreover it appears in evidence that, in such cases as these, they seldom turn off any of their standing set of journeymen, but keep them at work in hopes of better times.

On the whole, your committee feel no little satisfaction in bearing their testimony to the merits of the domestic system of manufacture; to the facilities it affords to men of steadiness and industry to establish themselves as little master manufacturers, and maintain their families in comfort by their own industry and frugality; and to the encouragement which it thus holds out to domestic habits and virtues. Neither can they omit to notice its favorable tendencies on the health and morals of a large and important class of the community.

But while your committee thus freely recognize the merits and value of the domestic system, they at the same time feel it their duty to declare it as their decided opinion that the apprehensions entertained of its being rooted out by the factory system are, at present at least, wholly without foundation.

For, happily, the merchant no less than the domestic manufacturer finds his interest and convenience promoted by the domestic system. While it continues he is able to carry on his trade with far less capital than if he were to be the manufacturer of his own cloth. Large sums must then be irrecoverably invested in extensive buildings and costly machinery; and, which perhaps is a consideration of still more force, he must submit to the constant trouble and solicitude of watching over a numerous body of workmen. He might then often incur the expense of manufacturing articles which, from some disappointment in the market, must either be kept on hand or be sold at

a loss. As it is, he can agree with his customer, at home or abroad, for any quantity of goods; and, whether on a long-expected or a sudden demand, he can repair at once to the market, and most probably purchase to the precise extent of his known wants; or, if the market happen not to furnish what he wishes to purchase, he can give out his sample and have his order executed immediately.

While these and various other considerations, which might be stated, interest the merchant as well as the manufacturer in the continuance of the domestic system; and when it is remembered that this mode of conducting the trade greatly multiplies the merchants, by enabling men to carry on business with a comparatively small capital, your committee cannot participate in the apprehensions which are entertained by the domestic clothiers. In fact, there are many merchants of very large capitals and of the highest credit, who for several generations have gone on purchasing in the halls, and some of this very description of persons state to your committee that they had not only had no thoughts of setting up factories themselves, but that they believed many of those who had established them were not greatly attached to that system, but only persisted in it because their buildings and machinery must otherwise lie a dead weight upon their hands. Under these circumstances the lively fear of the decline of the domestic and the general establishment of the factory system may reasonably excite surprise. It may have been in part occasioned by the decrease of the master manufacturers in the immediate neighborhood of the large towns, especially in two or three populous hamlets adjoining to Leeds, whence they have migrated to a greater distance in the country, where they might enjoy a little land and other conveniences and comforts. It may have strengthened the impression that, as your committee has already stated, three or four factories have, within no very long period of time, been established in Leeds or its vicinity.

But your committee are happy in being able to adduce one irrefragable fact in corroboration of the sentiments they have already expressed on this question: this is, that the quantity

of cloth manufactured by the domestic system has increased immensely of late years, not only in itself but as compared with the quantity made in factories.

Several factories, it has been observed, had long been established near Halifax and Huddersfield, but the principal progress of the factory system, and that which chiefly created the alarm, is stated to have been, within about the last fourteen years, in the town and neighborhood of Leeds. Your committee succeeded in their endeavors to discover the quantity of cloth annually manufactured in all these factories, and it was found not to exceed eight thousand pieces. According to the provisions of the acts commonly called the Stamping Acts, — 11 George II and 5 and 6 George III, returns are made every Easter to the justices at Pontefract Sessions, of the quantity of cloth which has been made in the preceding year, the account being kept at the fulling mills by officers appointed for that purpose. These returns your committee carefully examined for the last fourteen years, and find that in the year 1792, being by far the greatest year of export then known, there were manufactured 190,332 pieces of broad and 150,666 pieces of narrow cloth; yet the quantity of cloth manufactured in 1805 was 300,237 pieces of broad and 165,847 pieces of narrow cloth, giving an increase, in favor of 1805, of 109,905 pieces broad and 15,181 pieces narrow; from which increase, deducting the cloth manufactured in factories, there remains an increase of about 100,000 broad and 15,181 narrow pieces, to be placed to the account of the domestic system. The comparatively small quantity of cloth manufactured by the factories will excite less surprise when it is considered that they are better adapted to the manufacturing of fancy goods, of which immense quantities and great varieties have been invented and sold, chiefly for a foreign market, of late years.

Your committee trust they will not be accused of prolixity for having gone into some length in discussing this important question, on which, in that confidence, they beg leave to submit some few farther remarks. On the whole, your committee do not wonder that the domestic clothiers are warmly attached to their peculiar system. This is a predilection in which the

committee participate, but at the same time they must declare that they see at present no solid ground for the alarm which has gone forth, lest the halls should be deserted and the generality of merchants should set up factories. Your committee, however, must not withhold the declaration that if any such disposition had been perceived, it must have been their less pleasing duty to state that it would by no means have followed that it was a disposition to be counteracted by positive law.

The right of every man to employ the capital he inherits, or has acquired, according to his own discretion, without molestation or obstruction, so long as he does not infringe on the rights or property of others, is one of those privileges which the free and happy constitution of this country has long accustomed every Briton to consider as his birthright; and it cannot therefore be necessary for your committee to enlarge on its value or to illustrate its effects. These would be indubitably confirmed by an appeal to our own commercial prosperity, no less than by the history of other trading nations, in which it has been ever found that commerce and manufactures have flourished in free and declined in despotic countries. But without recurring to principles, of which, even under different circumstances, your committee would be compelled to admit the force, your committee have the satisfaction of seeing that the apprehensions entertained of factories are not only vicious in principle, but that they are practically erroneous, — to such a degree, that even the very opposite dispositions might be reasonably entertained; nor would it be difficult to prove that the factories, to a certain extent at least, and in the present day, seem absolutely necessary to the well-being of the domestic system, supplying those very particulars wherein the domestic system must be acknowledged to be inherently defective; for it is obvious that the little master manufacturers cannot afford, like the man who possesses considerable capital, to try the experiments which are requisite, and incur the risks, and even losses, which almost always occur in inventing and perfecting new articles of manufacture, or in carrying to a state of greater perfection articles already established. He cannot learn by personal inspection the wants

and habits, the arts, manufactures, and improvements of foreign countries; diligence, economy, and prudence are the requisites of his character, not invention, taste, and enterprise; nor would he be warranted in hazarding the loss of any part of his small capital: he walks in a sure road as long as he treads in the beaten track; but he must not deviate into the paths of speculation. The owner of a factory, on the contrary, being commonly possessed of a large capital, and having all his workmen employed under his own immediate superintendence, may make experiments, hazard speculation, invent shorter or better modes of performing old processes, may introduce new articles, and improve and perfect old ones, thus giving the range to his taste and fancy, and, thereby alone, enabling our manufacturers to stand the competition with their commercial rivals in other countries. Meanwhile, as is well worthy of remark (and experience abundantly warrants the assertion), many of these new fabrics and inventions, when their success is once established, become general among the whole body of manufacturers; the domestic manufacturers themselves thus benefiting, in the end, from those very factories which had been at first the objects of their jealousy. The history of almost all our other manufactures, in which great improvements have been made of late years, in some cases at an immense expense, and after numbers of unsuccessful experiments, strikingly illustrates and enforces the above remarks. It is besides an acknowledged fact that the owners of factories are often among the most extensive purchasers at the halls, where they buy from the domestic clothier the established articles of manufacture, or are able at once to answer a great and sudden order; while at home, and under their own superintendence, they make their fancy goods, and any articles of a newer, more costly, or more delicate quality, to which they are enabled by the domestic system to apply a much larger proportion of their capital. Thus the two systems, instead of rivaling, are mutual aids to each other, each supplying the other's defects and promoting the other's prosperity.

The committee feel it to be their duty to recommend the repeal of the 2d & 3d of Philip and Mary, or The Weavers Act.

3. The Great Inventions[1]

Wool was the most ancient and most important of English manufactures. Custom seemed to point to the permanent superiority of the woolen trade. The Chancellor of England sat on a sack of wool, and when men spoke of the staple trade they always referred to the trade in wool. For centuries British sovereigns and British statesmen had, after their own fashion, and according to their own ideas, actively promoted this particular industry. Edward III had induced Flemish weavers to settle in this country. The Restoration Parliament prohibited the exportation of British wool, and had ordered that the very dead should be interred in woolen shrouds. The manufacturers spread over the entire kingdom. Wherever there was a running stream to turn their mill there was at any rate the possibility of a woolen factory. Norwich, with its contiguous village of Worsted, was the chief seat of the trade; but York and Bradford, Worcestershire and Gloucestershire, Manchester and Kendal, were largely dependent on it.

The steps which Parliament took to promote this particular industry were not always very wise; in one point they were not very just. Ireland, in many respects, could have competed on advantageous terms with the woolen manufacturers of England. English jealousy prohibited, in consequence, the importation of Irish manufactured woolen goods. The result hardly answered the sanguine anticipations of the selfish senators who had secured it. The Irish, instead of sending their fleeces to be worked up in Great Britain, smuggled them, in return for contraband spirits, to France. England failed to obtain any large addition to her raw material, and Ireland was driven into closer communication with the hereditary foe of England. The loss of Irish fleeces was the more serious from another cause. The home supply of wool had originally been abundant and good; but its production at the commencement of the century was not increasing as rapidly as the demand for it; the quality of home-grown wool was rapidly deteriorating. The same sheep

[1] From Spencer Walpole's History of England from 1815, I, 52–76.

do not produce both wool and mutton in the greatest perfection. Every improvement in their meat is effected at the cost of their fleece. English mutton was better than it had ever been, but English manufacturers were compelled to mix foreign with native wool. Had trade been free, this result would have been of little moment. The English could have easily obtained an ample supply of raw material from the hills of Spain and other countries; but at the very time at which foreign wool became indispensable the necessities of the country, or the ignorance of her financiers, led to the imposition of a heavy import duty on wool. Addington, in 1802, levied a duty upon it of 5s. 3d. the cwt.: Vansittart, in 1813, raised the tax to 6s. 8d. The folly of the protectionists had done much to ruin the wool trade, but the evil already done was small in comparison with that in store.

Notwithstanding, however, the restrictions on the wool trade, the woolen industry was of great importance. In 1800 Law, as counsel to the manufacturers, declared, in an address to the House of Lords, that 600,000 packs of wool, worth £6,600,000, were produced annually in England and Wales, and that 1,500,000 persons were employed in the manufacture. But these figures, as McCulloch has shown, are undoubtedly great exaggerations. Rather more than 400,000 packs of wool were available for manufacturing purposes at the commencement of the century; more than nine tenths of these were produced at home, and some 350,000 or 400,000 persons were probably employed in the trade. The great woolen industry still deserved the name of "our staple trade"; but it did not merit the exaggerated descriptions which persons, who should have known better, applied to it.

If the staple trade of the country had originally been in woolen goods at the commencement of the present century, cotton was rapidly gaining upon wool. Cotton had been used in the extreme East and in the extreme West from the earliest periods of which we have any records. The Spaniards, on their discovery of America, found the Mexicans clothed in cotton. "There are trees," Herodotus had written nearly two thousand years before, "which grow wild there [in India], the fruit whereof

is a wool exceeding in beauty and goodness that of sheep. The natives make their clothes of this tree wool." But though the use of cotton had been known from the earliest ages, both in India and America, no cotton goods were imported into Europe; and in the ancient world both rich and poor were clothed in silk, linen, and wool. The industrious Moors introduced cotton into Spain. Many centuries afterwards cotton was imported into Italy, Saxony, and the Low Countries. Isolated from the rest of Europe, with little wealth, little industry, and no roads, rent by civil commotions, the English were the last people in Europe to introduce the manufacture of cotton goods into their own homes.

Towards the close of the sixteenth century, indeed, cotton goods were occasionally mentioned in the Statute Book, and the manufacture of the cottons of Manchester was regulated by acts passed in the reigns of Henry VIII, Edward VI, and Elizabeth. But there seem to be good reasons for concluding that Manchester cottons, in the time of the Tudors, were woolen goods, and did not consist of cotton at all. More than a century elapsed before any considerable trade in cotton attracted the attention of the legislature. The woolen manufacturers complained that people were dressing their children in printed cottons, and Parliament was actually persuaded to prohibit the introduction of Indian printed calicoes. Even an Act of Parliament, however, was unable to extinguish the growing taste for Indian cottons. The ladies, according to the complaint of an old writer, expected "to do what they please, to say what they please, and wear what they please." The taste for cotton led to the introduction of calico printing in London; Parliament, in order to encourage the new trade, was induced to sanction the importation of plain cotton cloths from India under a duty. The demand which was thus created for calicoes probably promoted their manufacture at home; and Manchester, Bolton, Frome, and other places gradually acquired fresh vitality from the creation of a new industry.

Many years, however, passed before the trade attained anything but the slenderest proportions. In the year 1697 only

1,976,359 pounds of cotton wool were imported into the United Kingdom. In the year 1751, only 2,976,610 pounds were imported. The official value of cotton goods exported amounted in the former year to only £5915; in the latter year to only £45,986. At the present time Britain annually purchases about 1,500,000,000 pounds of cotton wool. She annually disposes of cotton goods worth £60,000,000. The import trade is five hundred times as large as it was in 1751; the value of the exports has been increased thirteen hundred fold. The world has never seen, in any similar period, so prodigious a growth of manufacturing industry. But the trade has not merely grown from an infant into a giant, — its conditions have been concurrently revolutionized. Up to the middle of the last century cotton goods were really never made at all. The so-called cotton manufactures were a combination of wool or linen and cotton. No Englishman had been able to produce a cotton thread strong enough for the warp, and even the cotton manufacturers themselves appear to have despaired of doing so. They induced Parliament in 1736 to repeal the prohibition, which still encumbered the Statute Book, against wearing printed calicoes; but the repeal was granted on the curious condition "that the warp thereof be entirely linen yarn." Parliament no doubt intended by this condition to check the importation of Indian goods without interfering with the home manufacturers. The superior skill of the Indian manufacturers enabled them to use cotton for a warp, while clumsy workmanship made the use of cotton as a warp unattainable at home.

In the middle of the eighteenth century, then, a piece of cotton cloth, in the true sense of the term, had never been made in England. The so-called cotton goods were all made in the cottages of the weavers. The yarn was carded by hand; it was spun by hand; it was worked into cloth by a hand loom. The weaver was usually the head of the family; his wife and unmarried daughters spun the yarn for him. Spinning was the ordinary occupation of every girl, and the distaff was, for countless centuries, the ordinary occupation of every woman. The occupation was so universal that the distaff was occasionally

used as a synonym for "woman." "Le royaume de France ne tombe point en *quenouille*";

> See my royal master murdered,
> His crown usurped, a *distaff* in the throne.

To this day every unmarried girl is commonly described as a spinster.

The operation of weaving was, however, much more rapid than that of spinning. The weaver consumed more weft than his own family could supply him with; and the weavers generally experienced the greatest difficulty in obtaining sufficient yarn. About the middle of the eighteenth century the ingenuity of two persons, a father and a son, made this difference more apparent. The shuttle had originally been thrown by the hand from one end of the loom to the other. John Kay, a native of Bury, by his invention of the fly shuttle, saved the weaver from this labor. The lathe, in which the shuttle runs, was lengthened at both ends; two strings were attached to its opposite ends; the strings were held by a peg in the weaver's hands, and, by plucking the peg, the weaver was enabled to give the necessary impulse to the shuttle. Robert Kay, John Kay's son, added the drop box, by means of which the weaver was able "to use any one of the three shuttles, each containing a different colored weft, without the trouble of taking them from and replacing them in the lathe." By means of these inventions the productive power of each weaver was doubled. Each weaver was easily able to perform the amount of work which had previously required two men to do, and the spinsters found themselves more hopelessly distanced than ever in their efforts to supply the weavers with weft.

The preparation of weft was entirely accomplished by manual labor, and the process was very complicated. Carding and roving were both slowly performed with the aid of the clumsy implements which had originally been invented for the purpose. "Carding is the process to which the cotton is subjected after it has been opened and cleaned, in order that the fibers of the wool may be disentangled, straightened, and laid parallel with

each other, so as to admit of being spun. This was formerly effected by instruments called hand cards, which were brushes made of short pieces of wire instead of bristles, the wires being stuck into a sheet of leather, at a certain angle, and the leather fastened on a flat piece of wood about twelve inches long and five wide, with a handle. The cotton being spread upon one of the cards, it was repeatedly combed with another till all the fibers were laid straight, when it was stripped off the card in a fleecy roll ready for the rover. In 'roving' the spinner took the short fleecy rolls in which the cotton was stripped off the hand cards, applied them successively to the spindle, and whilst with one hand she turned the wheel and thus made the spindle revolve, with the other she drew out the cardings, which, receiving a slight twist from the spindle, were made into thick threads called rovings, and wound upon the spindle so as to form cops." In spinning, "the roving was spun into yarn; the operation was similar, but the thread was drawn out much finer and received much more twist. It will be seen that this instrument only admitted of one thread being spun at a time by one pair of hands, and the slowness of the operation and consequent expensiveness of the yarn formed a great obstacle to the establishment of a new manufacture."

The trade was in this humble and primitive state when a series of extraordinary and unparalleled inventions revolutionized the conditions on which cotton had been hitherto prepared. A little more than a century ago John Hargreaves, a poor weaver in the neighborhood of Blackburn, was returning home from a long walk, in which he had been purchasing a further supply of yarn for his loom. As he entered his cottage his wife, Jenny, accidentally upset the spindle which she was using. Hargreaves noticed that the spindles, which were now thrown into an upright position, continued to revolve, and that the thread was still spinning in his wife's hand. The idea immediately occurred to him that it would be possible to connect a considerable number of upright spindles with one wheel, and thus multiply the productive power of each spinster. "He contrived a frame in one part of which he placed eight rovings in a row,

and in another part a row of eight spindles. The rovings, when extended to the spindles, passed between two horizontal bars of wood, forming a clasp which opened and shut somewhat like a parallel ruler. When pressed together this clasp held the threads fast; a certain portion of roving being extended from the spindles to the wooden clasp, the clasp was closed and was then drawn along the horizontal frame to a considerable distance from the spindles, by which the threads were lengthened out and reduced to the proper tenuity; this was done with the spinner's left hand, and his right hand at the same time turned a wheel which caused the spindles to revolve rapidly, and thus the roving was spun into yarn. By returning the clasp to its first situation and letting down a piercer wire, the yarn was wound upon the spindle."

Hargreaves succeeded in keeping his admirable invention secret for a time, but the powers of his machine soon became known. His ignorant neighbors hastily concluded that a machine which enabled one spinster to do the work of eight would throw multitudes of persons out of employment. A mob broke into his house and destroyed his machine. Hargreaves himself had to retire to Nottingham, where, with the friendly assistance of another person, he was able to take out a patent for the spinning jenny, as the machine, in compliment to his industrious wife, was called.

The invention of the spinning jenny gave a new impulse to the cotton manufacture. But the invention of the spinning jenny, if it had been accompanied by no other improvements, would not have allowed any purely cotton goods to be manufactured in England. The yarn spun by the jenny, like that which had previously been spun by hand, was neither fine enough nor hard enough to be employed as warp, and linen or woolen threads had consequently to be used for this purpose. In the very year, however, in which Hargreaves moved from Blackburn to Nottingham, Richard Arkwright took out a patent for his still more celebrated machine. It is alleged that John Wyatt, of Birmingham, thirty years before the date of Arkwright's patent, had elaborated a machine for spinning by rollers.

But in a work of this description it is impossible to analyze the conflicting claims of rival inventors to the credit of discovering particular machinery; and the historian can do no more than record the struggles of those whose names are associated with the improvements which he is noticing. Richard Arkwright, like John Hargreaves, had a humble origin. Hargreaves began life as a poor weaver; Arkwright, as a barber's assistant. Hargreaves had a fitting partner in his industrious wife Jenny; Mrs. Arkwright is said to have destroyed the models which her husband had made. But Arkwright was not deterred from his pursuit by the poverty of his circumstances or the conduct of his wife. "After many years' intense and painful application," he invented his memorable machine for spinning by rollers, and laid the foundations of the gigantic industry which has done more than any other trade to concentrate in this country the wealth of the world. The principle of Arkwright's great invention is very simple. He passed the thread over two pairs of rollers, one of which was made to revolve much more rapidly than the other. The thread, after passing over the pair revolving slowly, was drawn into the requisite tenuity by the rollers revolving at a higher rapidity. By this simple but memorable invention Arkwright succeeded in producing thread capable of employment as warp. From the circumstance that the mill at which his machinery was first erected was driven by water power, the machine received the somewhat inappropriate name of the water frame; the thread spun by it was usually called the water twist.

The invention of the fly shuttle by John Kay had enabled the weavers to consume more cotton than the spinsters had been able to provide; the invention of the spinning jenny and the water frame would have been useless if the old system of hand carding had not been superseded by a more efficient and more rapid process. Just as Arkwright applied rotatory motion to spinning, so Lewis Paul introduced revolving cylinders for carding cotton. Paul's machine consisted of "a horizontal cylinder, covered in its whole circumference with parallel rows of cards with intervening spaces, and turned by a handle. Under the cylinder was a concave frame lined internally with cards

exactly fitting the lower half of the cylinder, so that when the handle was turned the cards of the cylinder and of the concave frame worked against each other and carded the wool." "The cardings were of course only of the length of the cylinder, but an ingenious apparatus was attached for making them into a perpetual carding. Each length was placed on a flat, broad riband, which was extended between two short cylinders, and which wound upon one cylinder as it unwound from the other."

This extraordinary series of inventions placed an almost unlimited supply of yarn at the disposal of the weaver. But the machinery, which had thus been introduced, was still incapable of providing yarn fit for the finer qualities of cotton cloth. "The water frame spun twist for warps, but it could not be advantageously used for the finer qualities, as thread of great tenuity has not strength to bear the pull of the rollers when winding itself on the bobbin." This defect, however, was removed by the ingenuity of Samuel Crompton, a young weaver residing near Bolton. Crompton succeeded in combining in one machine the various excellences of "Arkwright's water frame and Hargreaves's jenny." Like the former, his machine, which from its nature is happily called the mule, "has a system of rollers to reduce the roving ; and, like the latter, it has spindles without bobbins to give the twist, and the thread is stretched and spun at the same time by the spindles after the rollers have ceased to give out the rove. The distinguishing feature of the mule is that the spindles, instead of being stationary, as in both the other machines, are placed on a movable carriage, which is wheeled out to the distance of fifty-four or fifty-six inches from the roller beam, in order to stretch and twist the thread, and wheeled in again to wind it on the spindles. In the jenny, the clasp which held the rovings was drawn back by the hand from the spindles ; in the mule, on the contrary, the spindles recede from the clasp, or from the roller beam, which acts as a clasp. The rollers of the mule draw out the roving much less than those of the water frame, and they act like the clasp of the jenny by stopping and holding fast the rove after a certain quantity has been given out, whilst the spindles continue to

recede for a short distance farther, so that the draught of the thread is in part made by the receding of the spindles. By this arrangement, comprising the advantages both of the roller and the spindles, the thread is stretched more gently and equably, and a much finer quality of yarn can therefore be produced."

The effects of Crompton's great invention may be stated epigrammatically. Before Crompton's time it was thought impossible to spin eighty hanks to the pound. The mule has spun three hundred and fifty hanks to the pound! The natives of India could spin a pound of cotton into a thread one hundred and nineteen miles long. The English succeeded in spinning the same thread to a length of one hundred and sixty miles. Yarn of the finest quality was at once at the disposal of the weaver, and an opportunity was afforded for the production of an indefinite quantity of cotton yarn. But the great inventions, which have been thus enumerated, would not of themselves have been sufficient to establish the cotton manufacture on its present basis. The ingenuity of Hargreaves, Arkwright, and Crompton had been exercised to provide the weaver with yarn. Their inventions had provided him with more yarn than he could by any possibility use. The spinster had beaten the weaver, just as the weaver had previously beaten the spinster, and the manufacture of cotton seemed likely to stand still because the yarn could not be woven more rapidly than an expert workman with Kay's improved fly shuttle could weave it.

Such a result was actually contemplated by some of the leading manufacturers, and such a result might possibly have temporarily occurred if it had not been averted by the ingenuity of a Kentish clergyman. Edmund Cartwright, a clergyman residing in Kent, happened to be staying at Matlock in the summer of 1784, and to be thrown into the company of some Manchester gentlemen. The conversation turned on Arkwright's machinery, and "one of the company observed that as soon as Arkwright's patent expired so many mills would be erected and so much cotton spun that hands would never be found to weave it." Cartwright replied "that Arkwright must then set his wits to

work to invent a weaving mill." The Manchester gentlemen, however, unanimously agreed that the thing was impracticable. Cartwright "controverted the impracticability by remarking that there had been exhibited an automaton figure which played at chess"; it could not be "more difficult to construct a machine that shall weave than one which shall make all the variety of moves which are required in that complicated game." Within three years he had himself proved that the invention was practicable by producing the power loom. Subsequent inventors improved the idea which Cartwright had originated, and within fifty years from the date of his memorable visit to Matlock there were not less than one hundred thousand power looms at work in Great Britain alone.

The inventions which have been thus enumerated are the most remarkable of the improvements which stimulated the development of the cotton industry. But other inventions, less generally remembered, were hardly less wonderful or less beneficial than these. Up to the middle of the last century cotton could only be bleached by the cloth being steeped in alkaline lyes for several days, washed clean, and spread on the grass for some weeks to dry. The process had to be repeated several times, and many months were consumed before the tedious operation was concluded. Scheele, the Swedish philosopher, discovered in 1774 the bleaching properties of chlorine, or oxymuriatic acid. Berthollet, the French chemist, conceived in 1785 the idea of applying the acid to bleaching cloth. Watt, the inventor of the steam engine, and Henry, of Manchester, respectively introduced the new acid into the bleach fields of Macgregor of Glasgow and Ridgway of Bolton. The process of bleaching was at once reduced from months to days, or even hours.

In the same year in which Watt and Henry were introducing the new acid to the bleacher, Bell, a Scotchman, was laying the foundations of a trade in printed calicoes. "The old method of printing was by blocks of sycamore, about 10 inches long by 5 broad, on the surface of which the pattern was cut in relief in the common method of wood engraving." As the block had to be applied to the cloth by hand, "no more of it could be

printed at once than the block could cover, and a single piece of calico twenty-eight yards in length required the application of the block four hundred and forty-eight times." This clumsy process was superseded by cylinder printing. "A polished copper cylinder several feet in length and three or four inches in diameter is engraved with a pattern round its whole circumference and from end to end. It is then placed horizontally in a press, and, as it revolves, the lower part of the circumference passes through the coloring matter, which is again removed from the whole surface of the cylinder, except the engraved pattern, by an elastic steel blade placed in contact with the cylinder, and reduced to so fine and straight an edge as to take off the color without scratching the copper. The color being thus left only in the engraved pattern, the piece of calico or muslin is drawn tightly over the cylinder, which revolves in the same direction and prints the cloth." The saving of labor "effected by the machine" is "immense; one of the cylinder machines, attended by a man and a boy, is actually capable of producing as much work as could be turned out by one hundred block printers and as many tear boys."

Such are the leading inventions which made Great Britain in less than a century the wealthiest country in the world. "When we undertook the cotton manufacture we had comparatively few facilities for its prosecution, and had to struggle with the greatest difficulties. The raw material was produced at an immense distance from our shores, and in Hindustan and in China the inhabitants had arrived at such perfection in the arts of spinning and weaving, that the lightness and delicacy of their finest cloths emulated the web of the gossamer and seemed to set competition at defiance. Such, however, has been the influence of the stupendous discoveries and inventions of Hargreaves, Arkwright, Crompton, Cartwright, and others, that we have overcome all these difficulties; that neither the extreme cheapness of labor in Hindustan, nor the excellence to which the natives had attained, had enabled them to withstand the competition of those who buy their cotton, and who, after carrying it five thousand miles to be manufactured, carry back the goods to them."

If Great Britain entirely monopolized the woolen and the cotton trades, she had done her best, in her own way, to promote the manufacture of linen in Ireland. In 1698 Parliament, while rigorously prohibiting the exportation of Irish woolen goods, sedulously attempted to encourage the linen manufacture in Ireland. Bounties were paid on all linen goods imported into this country from the sister island; and the great linen trade acquired, especially in Ulster, the importance which it still retains. In 1800, 31,978,039 yards of linen were exported from Ireland to Great Britain, and 2,585,829 yards to other countries. In 1815 the export trade had risen to 37,986,359 and 5,496,206 yards respectively. A formidable rival to Ulster was, however, slowly rising in another part of the kingdom. At the close of the great French war Dundee was still an insignificant manufacturing town, but the foundations were already laid of the surprising supremacy which she has since acquired in the linen trade. Some three thousand tons of flax were imported into the Scotch port in 1814. But the time was rapidly coming when the shipments of linen from this single place were to exceed those from all Ireland, and Dundee was to be spoken of by professed economists as the Manchester of the linen trade.

The silk manufacturers of Britain have never yet succeeded in acquiring the predominance which the woolen, cotton, and linen factors have virtually obtained. The worm, by which the raw material is produced, has never been acclimatized on a large scale in England; and the trade has naturally flourished chiefly in those countries where the worm could live and spin, or where the raw material could be the most easily procured. Insular prejudice, moreover, should not induce the historian to forget another reason which has materially interfered with the development of this particular trade. The ingenuity of the British was superior to that of every other nation, but the taste of the British was inferior to that of most people. An article which was only worn by the rich, and which was only used for its beauty and delicacy, was naturally produced most successfully by the most artistic people. English woolen goods found their way to every continental nation, but the wealthy English

imported their finest lustrings and *à les modes* from Italy and France. The silk trade would, in fact, have hardly found a home in England at all, had it not been for the folly of a neighboring potentate. Louis XIV, in a disastrous hour for France, revoked the Edict of Nantes; and the French Huguenots, to their eternal honor, preferring their consciences to their country, sought a home amongst a more liberal people. The silk weavers of France settled in Spitalfields, and the British silk trade gained rapidly on its foreign rivals. Parliament adopted the usual clumsy contrivances to promote an industry whose importance it was no longer possible to ignore. Prohibitory duties, designed to discourage the importation of foreign silk, were imposed by the legislature; monopolies were granted to successful throwsters, and every precaution was taken which the follies of protection could suggest, to perpetuate the supremacy which Great Britain was gradually acquiring in the silk trade. The usual results followed this shortsighted policy. Prohibitory duties encouraged smuggling. Foreign silk found its way into England, and the revenue was defrauded accordingly. The English trade began to decline, and Parliament again interfered to promote its prosperity. In that unhappy period of English history which succeeds the fall of Chatham and the rise of Pitt, Parliament adopted fresh expedients to promote the prosperity of the silk trade. Prohibitory duties were replaced with actual prohibition, and elaborate attempts were made to regulate the wages of the Spitalfields weavers. The natural consequences ensued. Smuggling, which had been created by prohibitive duties, flourished with fresh vitality under the influence of actual prohibition. The capitalists transferred their mills from Spitalfields, where the labors of their workmen were fixed by law, to Macclesfield and other places, where master and workmen were free to make their own terms.

The silk trade was hardly being developed with the same rapidity as the three other textile industries. But silk, like wool, cotton, and linen, was affording a considerable amount of employment to a constantly growing population. The textile industries of this country could not, indeed, have acquired the

importance which they have since obtained, if the inventions of Hargreaves, Arkwright, Crompton, and Cartwright had not been supplemented by the labors of explorers in another field. Machinery makes possible what man by manual labor alone would find it impossible to perform. But machinery would be a useless incumbrance were it not for the presence of some motive power. From the earliest ages men have endeavored to supplement the brute force of animals with the more powerful forces which nature has placed at their disposal. The ox was not to be perpetually used to tread out the corn ; women were not always to pass their days laboriously grinding at a mill. The movement of the atmosphere, the flow of running water, were to be taken into alliance with man ; and the invention of windmills and water mills was to mark an advance in the onward march of civilization. But air and water, mighty forces as they are, proved but fickle and uncertain auxiliaries. When the wind was too low its strength was insufficient to turn the cumbrous sails of the mill ; when it was too high it deranged the complicated machinery of the miller. The miller who trusted to water was hardly more fortunate than the man who relied upon air. A summer drought reduced the power of his wheel at the very time when long days and fine weather made him anxious to accomplish the utmost possible amount of work. A flood swept away the dam on which his mill depended for its supply of water. An admirable auxiliary during certain portions of each year, water was occasionally too strong, occasionally too weak, for the purposes of the miller.

The manufacturing industry of the country stood, therefore, in need of a new motive power; and invention, which is supposed by some thinkers to depend like other commodities on the laws of demand and supply, was busily elaborating a new problem, — the use of a novel power, which was to revolutionize the world. The elasticity of hot water had long been noticed, and for a century and a half before the period of this history a few advanced thinkers had been speculating on the possibility of utilizing the expansive powers of steam. The Marquis of Worcester had described, in his "Century of Inventions," "an

admirable and most forcible way to drive up water by means of fire." Steam was actually used early in the eighteenth century as a motive power for pumping water from mines; and Newcomen, a blacksmith in Dartmouth, invented a tolerably efficient steam engine. It was not, however, till 1769, that James Watt, a native of Greenock, and a mathematical-instrument maker in Glasgow, obtained his first patent for "methods of lessening the consumption of steam, and consequently of fuel, in fire engines." James Watt was born in 1736. His father was a magistrate, and had the good sense to encourage the good turn for mechanics which his son displayed at a very early age. At the age of nineteen Watt was placed with a mathematical-instrument maker in London, but feeble health, which had interfered with his studies as a boy, prevented him from pursuing his avocations in England. Watt returned to his native country. The Glasgow body of Arts and Trades, however, refused to allow him to exercise his calling within the limits of their jurisdiction; and had it not been for the University of Glasgow, which befriended him in his difficulty and appointed him their mathematical-instrument maker, the career of one of the greatest geniuses whom Great Britain has produced would have been stinted at its outset.

There happened to be in the university a model of Newcomen's engine. It happened, too, that the model was defectively constructed. Watt, in the ordinary course of his business, was asked to remedy its defects, and he soon succeeded in doing so. But his examination of the model convinced him of serious faults in the original. Newcomen had injected cold water into the cylinder in order to condense the steam and thus obtain a necessary vacuum for the piston to work in. Watt discovered that three fourths of the fuel which the engine consumed was required to reheat the cylinder. "It occurred to him that, if the condensation could be performed in a separate vessel, communicating with the cylinder, the latter could be kept hot, while the former was cooled, and the vapor arising from the injected water could also be prevented from impairing the vacuum. The communication could easily be effected by a tube, and the water

could be pumped out. This is the first and the grand invention by which he at once saved three fourths of the fuel and increased the power one fourth, thus making every pound of coal produce five times the force formerly obtained from it." But Watt was not satisfied with this single improvement. He introduced steam above as well as below the piston, and thus again increased the power of the machine. He discovered the principle of parallel motion, and thus made the piston move in a true straight line. He regulated the supply of water to the boiler by the means of "floats," the supply of steam to the cylinder by the application of "the governor," and, by the addition of all these discoveries, "satisfied himself that he had almost created a new engine of incalculable power, universal application, and inestimable value." It is unnecessary to relate in these pages the gradual introduction of the new machine to the manufacturing public. Watt was first connected with Dr. Roebuck, an iron master of Glasgow, but his name is permanently associated with that of Mr. Boulton, the proprietor of the Soho Works near Birmingham, whose partner he became in 1774. Watt and Boulton rapidly supplemented the original invention with further improvements. Other inventors succeeded in the same field, and by the beginning of the present century steam was established as a new force; advanced thinkers were considering the possibility of applying it to purposes of locomotion.

The steam engine, indeed, would not have been invented in the eighteenth century, or would not at any rate have been discovered in this country, if it had not been for the vast mineral wealth with which Great Britain has fortunately been provided. Iron, the most useful of all metals, presents greater difficulties than any other of them to the manufacturer, and iron was probably one of the very last minerals which was applied to the service of man. Centuries elapsed before the rich mines of our own country were even slightly worked. The Romans, indeed, established iron works in Gloucestershire, just as they obtained tin from Cornwall or lead from Wales. But the British did not imitate the example of their earliest conquerors, and the little iron which was used in this country was imported from abroad.

Some progress was, no doubt, made in the southern counties, the smelters naturally seeking their ores in those places where wood, then the only available fuel, was to be found in abundance. The railings which but lately encircled our metropolitan cathedral were cast in Sussex. But the prosperity of the trade involved its own ruin. Iron could not be made without large quantities of fuel. The wood gradually disappeared before the operations of the smelter, and the country gentlemen hesitated to sell their trees for fuel when the increase of shipping was creating a growing demand for timber. Nor were the country gentlemen animated in this respect by purely selfish motives. Parliament itself shared their apprehensions and indorsed their views. It regarded the constant destruction of timber with such disfavor that it seriously contemplated the suppression of the iron trade as the only practical remedy. "Many think," said a contemporary writer, "that there should be no works anywhere, they so devour the woods." Fortunately, so crucial a remedy was not necessary. At the commencement of the seventeenth century Dud Dudley, a natural son of Lord Dudley, had proved the feasibility of smelting iron with coal; but the prejudice and ignorance of the work people had prevented the adoption of his invention. In the middle of the eighteenth century attention was again drawn to his process, and the possibility of substituting coal for wood was conclusively established at the Darby's works at Coalbrook Dale. The impetus which was thus given to the iron trade was extraordinary. The total produce of the country amounted at the time to only 18,000 tons of iron a year, four fifths of the iron used being imported from Sweden. In 1802 Great Britain possessed 168 blast furnaces, and produced 170,000 tons of iron annually. In 1806 the produce had risen to 250,000 tons; it had increased in 1820 to 400,000 tons. Fifty years afterwards, or in 1870, 6,000,000 tons of iron were produced from British ores.

The progress of the iron trade indicated, of course, a corresponding development of the supply of coal. Coal had been used in England for domestic purposes from very early periods. Sea coal had been brought to London; but the citizens had

complained that the smoke was injurious to their health, and had persuaded the legislature to forbid the use of coal on sanitary grounds. The convenience of the new fuel triumphed, however, over the arguments of the sanitarians and the prohibitions of the legislature, and coal continued to be brought in constantly though slowly increasing quantities to London. Its use for smelting iron led to new contrivances for insuring its economical production. Before the commencement of the present century there were two great difficulties which interfered with the operations of the miner. The roof of the mine had necessarily to be propped, and, as no one had thought of using wood, and coal itself was employed for the purpose, only 60 per cent of the produce of each mine was raised above ground. About the beginning of the nineteenth century timber struts were gradually substituted for the pillars of coal, and it became consequently possible to raise from the mine all the coal won by the miner. A still more important discovery was made at the exact period at which this history commences. The coal miner in his underground calling was constantly exposed to the dangers of fire damp, and was liable to be destroyed without a moment's notice by the most fearful catastrophe. In the year in which the great French war was concluded, Sir Humphry Davy succeeded in perfecting his safety lamp, an invention which enabled the most dangerous mines to be worked with comparative safety, and thus augmented to an extraordinary extent the available supplies of coal.

Humphry Davy was the son of a wood carver of Penzance, and early in life was apprenticed to a local apothecary. Chance — of which other men would perhaps have failed to avail themselves — gave the lad an opportunity of cultivating his taste for chemistry. A French surgeon, wrecked on the coast, to whom Davy had shown some kindness, gave him a case of surgical instruments and "the means of making some approximation to an exhausting engine." Watt's son, Gregory Watt, was ordered to winter in Cornwall for his health, and happened to take apartments in the house of Davy's mother. "Another accident threw him in the way of Mr. Davies Giddy, a cultivator of natural as

well as mathematical science." Giddy "gave to Davy the use of an excellent library"; he "introduced him to Dr. Beddoes," who made his young friend the head of "a pneumatic institution for the medical use of gases," which he was then forming. The publication, soon afterwards, of a fanciful paper on light and heat gave Davy a considerable reputation. He was successively chosen assistant lecturer in chemistry, and sole chemical professor of the Royal Institution. While he held this office his inquiries induced him to investigate the causes of the fearful explosions which continually took place in coal mines. He soon satisfied himself that carbureted hydrogen is the cause of fire damp, and that it will not explode unless mixed with atmospheric air "in proportions between six and fourteen times its bulk"; and "he was surprised to observe in the course of his experiments, made for ascertaining how the inflammation takes place, that the flames will not pass through tubes of a certain length and smallness of bore. He then found that if the length be diminished and the bore also reduced, the flames will not pass; and he further found that by multiplying the number of the tubes this length may be safely diminished, provided the bore be proportionally lessened. Hence it appeared that gauze of wire, whose meshes were only one twenty-second of an inch in diameter, stopped the flame and prevented the explosion." These successive discoveries, the results of repeated experiments and careful thought, led to the invention of the safety lamp. The first safety lamp was made in the year 1815. There is some satisfaction in reflecting that the very year which was memorable for the conclusion of the longest and most destructive of modern wars was also remarkable for one of the most beneficial discoveries which have ever been given to mankind. Even the peace of Paris did not probably save more life or avert more suffering than Sir Humphry Davy's invention. The gratitude of a nation properly bestowed titles and pensions, lands and houses, stars and honors, on the conqueror of Napoleon. Custom and precedent only allowed inferior rewards to the inventor of the safety lamp. Yet Hargreaves and Arkwright, Crompton and Cartwright, Watt and Davy, did more for the cause of mankind

than even Wellington. Their lives had more influence on their country's future than the career of the great general. His victories secured his country peace for rather more than a generation. Their inventions gave Great Britain a commercial supremacy which neither war nor foreign competition has yet destroyed.

A series of extraordinary inventions at the commencement of the present century had supplied Great Britain with a new manufacturing vigor. Hargreaves, Arkwright, Crompton, and Cartwright had developed, to a remarkable degree, the producing power of man; Watt had given a new significance to their inventions by superseding the feeble and unequal forces, which had hitherto been used, with the most tractable and powerful of agents. And Davy, by his beneficent contrivance, had enabled coal to be won with less danger, and had relieved the miner's life from one of its most hideous perils. The ingenuity of these great men had been exercised with different objects; but the inventions of each of them had given fresh importance to the discoveries of the others. The spinning jenny, the water frame, and the mule would have been deprived of half their value, if they had not been supplemented with the power loom; the power loom would, in many places, have been useless without the steam engine; the steam engine would have been idle, had it not been for coal; the coal would not have been won without danger, had it not been for Sir H. Davy. Coal, then, was the commodity whose extended use was gradually revolutionizing the world; and the population of the world, as the first consequence of the change, gradually moved towards the coal fields.

4. The Growth of the Factory System in the United States [1]

In this country, as well as in England, the germ of the textile factory existed in the fulling and carding mills; the former, dating earlier, being the mills for finishing the coarse cloths woven by hand in the homes of our ancestors; in the latter, the carding mill, the wool was prepared for the hand wheel. At

[1] From Tenth Census, II, 537–541.

the close of the Revolution the domestic system of manufactures prevailed throughout the states.

The first attempts to secure the spinning machinery which had come into use in England were made in Philadelphia early in the year 1775, when probably the first spinning jenny ever seen in America was exhibited in that city. During the war the manufacturers extended their enterprises, and even built and run mills which writers often call factories, but they can hardly be classed under that term. Similar efforts, all preliminary to the establishment of the factory system, were made in Worcester, Massachusetts, in 1780. In 1781 the British Parliament, determined that the textile machinery by which the manufactures of England were being rapidly extended, and which the continental producers were anxious to secure, should not be used by the people of America, reënacted and enlarged the scope of the Statute of 1774 against its exportation. By 21 George III, c. 37, it was provided that any person who packed or put on board, or caused to be brought to any place in order to be put on any vessel for exportation, any machine, engine, tool, press, paper, utensil, or implement, or any part thereof, which now is or hereafter may be used in the woolen, cotton, linen, or silk manufacture of the kingdom, or goods wherein wool, cotton, linen, or silk are used, or any model or plan of such machinery, tool, engine, press, utensil, or implement, should forfeit every such machine, etc., and all goods packed therewith, and £200, and suffer imprisonment for one year. In 1782 a law was enacted which prohibited, under penalty of £500, the exportation or the attempt to export "blocks, plates, engines, tools, or utensils used in or which are proper for the preparing or finishing of the calico-, cotton-, muslin-, or linen-printing manufactures, or any part thereof." The same act prohibited the transportation of tools employed in the iron and steel manufactures. Acts were also passed interdicting the emigration of artificers. All these laws were enforced with great vigilance, and were of course serious obstacles to the institution of the new system of manufacture in America.

The manufacturers of this country were thus compelled either to smuggle or to invent their machinery. Both methods were practiced until most of the secrets of the manufacture of common goods were made available here.

The planting of the mechanic arts in this country became a necessity during the War of the Revolution, and afterwards the spirit of American enterprise demanded that New England and the Middle States should utilize the water powers which they possessed, and by such utilization supply the people with home manufactures.

When the people of the states saw that the treaty of Paris had not brought industrial independence, a new form of expression of patriotism took the place of military service; and associations were formed, the object of which was to discourage the use of British goods; and as the Articles of Confederation did not provide for the regulation of commerce, the legislatures of the states were besought to protect home manufactures. The Constitution of 1789 remedied the defects of the articles in this respect, and gave Congress the power to legislate on commercial affairs. The Constitution was really the outcome of the industrial necessities of the people, because it was on account of the difficulties and the irritations growing out of the various commercial regulations of the individual states that a convention of commissioners from the various states was held at Annapolis in September, 1786, which convention recommended the one that framed the new or present Constitution of the United States.

Of course those industries whose products were called for by the necessities of the war were greatly stimulated, but with peace came reaction and the flooding of our markets with foreign goods.

The second act under the Constitution was passed July 4, 1789, with this preamble:

"Whereas it is necessary for the support of the government, for the discharge of the debts of the United States, and for the encouragement and the protection of manufactures, that duties be laid on goods, wares, and merchandise imported;

"*Be it enacted*, etc."

Patriotism and statute law thus paved the way for the importation of the factory system of industry, and so its institution here, as well as in England, was the result of both moral and economical forces.

As early as 1786, before the adoption of the Constitution of the United States, the legislature of Massachusetts offered encouragement for the introduction of machinery for carding and spinning by granting to Robert and Alexander Barr the sum of two hundred pounds to enable them to complete a roping machine, and also to "construct such other machines as are necessary for the purpose of carding, roping, and spinning of sheep's wool, as well as of cotton wool." The next year these parties were granted six tickets in a land lottery. Others engaged in the invention and construction of cotton-spinning machines at Bridgewater, being associated with the Barrs, who came to Massachusetts from Scotland at the invitation of Honorable Hugh Orr, of Bridgewater, and for the purpose of constructing spinning machines. There is no doubt that the machinery built by them was the first in this country which included the Arkwright devices ; the first factory, however, in America expressly for the manufacture of cotton goods was erected at Beverly, Massachusetts, in 1787. This enterprise was aided by the legislature. The factory at Beverly was built of brick, was driven by horse power, and was continued in operation for several years; but its career as a cotton mill was brief, and no great success attended it. About the same time other attempts had been made in Rhode Island, New York, and Pennsylvania, but principally in Rhode Island and that part of Massachusetts contiguous to Rhode Island.

The honor of the introduction of power-spinning machines in this country, and of their early use here, is shared by these last-named states; for while Massachusetts claims to have made the first experiments in embodying the principles of Arkwright's inventions and the first cotton factory in America, Rhode Island claims the first factory in which perfected machinery, made after the English models, was practically employed. This was the factory built by Samuel Slater, in 1790, in Pawtucket,

Rhode Island, which still stands in the rear of Mill street in that city, and the hum of cotton machinery can still be heard within its walls. Previous to 1790 the common jenny and stock card had been in operation upon a small scale in various parts of the United States, but principally in Pennsylvania, New York, Rhode Island, and Massachusetts; but every endeavor to introduce the system of spinning known as water-frame spinning, or Arkwright's method, had failed. The introduction of this system was the work of Slater, whom President Jackson designated "the father of American manufactures." Samuel Slater was born in Belper, Derbyshire, England, June 9, 1768, and at fourteen years of age was bound as an apprentice to Jedediah Strutt, Esq., a manufacturer of cotton machinery at Milford, near Belper. Strutt was for several years a partner of Sir Richard Arkwright in the cotton-spinning business, so young Slater had every opportunity to master the details of the construction of the cotton machinery then in use in England, for during the last four or five years of his apprenticeship he served as general overseer, not only in making machinery, but in the manufacturing department of Strutt's factory. Near the close of his term his attention was drawn to the wants of the states by accidentally seeing a notice in an American paper of the efforts various states were making by way of offering bounties to parties for the production of cotton machinery. Slater knew well that under the laws of England he could carry neither machines nor models nor plans of machines out of the country; so, after completing his full time with Mr. Strutt, he continued some time longer with him, superintending some new works Mr. Strutt was erecting. This he did that he might so perfect his knowledge of the business in every department that he could construct machinery from memory without taking plans, models, or specifications. With this knowledge Slater embarked at London, September 13, 1789, for New York, where he landed November 17, and at once sought parties interested in cotton manufactures. Finding the works of the New York Manufacturing Company, to whom he was introduced, unsatisfactory, he corresponded with Messrs. Brown & Almy,

of Providence, who owned some crude spinning machines, some of which came from the factory at Beverly, Massachusetts. In January, 1790, Slater made arrangements with Brown & Almy to construct machinery on the English plan. This he did at Pawtucket, making the machinery principally with his own hands, and on the 20th of December, 1790, he started three cards, drawing and roving, together with seventy-two spindles, working entirely on the Arkwright plan, and being the first of the kind ever operated in America.

It is generally supposed that the course of the progress of the manufacture of cotton goods in this country is quite clearly marked, yet a careful study of the subject seems rather to dissipate the line of advancement instead of bringing it into clearer view. Dr. Leander Bishop, in his exceedingly valuable work, "A History of American Manufactures," in speaking of the clothing manufacture, states that a correspondent of the *American Museum*, writing from Charleston, South Carolina, in July, 1790, refers to a gentleman who "had completed, and had in operation on the High Hills of the Santee, near Statesburg, ginning, carding, and other machines driven by water, and also spinning machines, with eighty-four spindles each, with every necessary article for manufacturing cotton. If this information be correct, the attempt to manufacture by machinery the cotton which they were then beginning to cultivate extensively was nearly as early as those of the Northern States."

Certainly this bit of history of attempts in Southern States, of the efforts of Samuel Wetherell of Philadelphia, of the Beverly Company in Massachusetts, of Moses Brown at Providence, Rhode Island, — all before Slater's coming, — to introduce spinning by power illustrates the difficulty of locating the origin of an institution when a country of such proportions as our own constitutes the field. It is safe, historically, to start with Slater as the first to erect cotton machinery on the English plan, and to give the factory system 1790 as its birthday.

The progress of the system has been uninterrupted from 1790, save by temporary causes and for brief periods; but these interruptions only gave an increased impetus to its growth.

In 1792, by the invention of the cotton gin, an American, Eli Whitney, of Massachusetts, residing temporarily in Georgia, contributed as much toward the growth of the factory system as England had contributed by the splendid series of inventions which made the cotton-manufacturing machinery of the system.

The alarm of the people at the increase in the demand for foreign goods took shape again in 1794 and the decade following, and, by patriotic appeals to all classes, societies and clubs were formed pledged to wear only homemade goods. Congress was called upon to restrict importations. The result of all these efforts and influences stimulated the manufacture of cotton and other textiles. The water privileges of New England and the Middle States offered to enterprising men the inducement to build factories for the spinning of yarn for the household manufacture of cloth. At the close of 1809, according to a report made by Mr. Albert Gallatin, Secretary of the Treasury in 1810, eighty-seven cotton factories had been erected in the United States, which, when in operation, would employ eighty thousand spindles.

The perfect factory, the scientific arrangement of parts for the successive processes necessary for the manipulation of the raw material till it came out finished goods, had not yet been constructed. As I have said, the power loom did not come into use in England till about 1806, while in this country it was not used at all till after the War of 1812. In England, even, it had not been used in the same factory with the spinning machines. In fact, for many years the custom of spinning the yarn under one management and weaving the cloth under another has prevailed in England.

In 1811 Mr. Francis C. Lowell, of Boston, visited England, and spent much time in inspecting cotton factories, for the purpose of obtaining all possible information relative to cotton manufacture, with a view to the introduction of improved machinery in the United States. The power loom was being introduced in Great Britain at this time, but its construction was kept very secret, and public opinion was not very favorable to its success. Mr. Lowell learned all he could regarding the

new machine, and determined to perfect it himself. He returned to the states in 1814, and at once began his experiments on Broad street, Boston. His first move was to secure the skill of Paul Moody, of Amesbury, Massachusetts, a well-known mechanic. By and through the encouragement of Mr. Nathan Appleton a company had been organized by Mr. Lowell and Mr. Patrick T. Jackson, with Mr. Appleton as one of its directors, for the establishment of a cotton manufactory, to be located in Waltham, Massachusetts, on a water privilege they had purchased. This factory was completed in the autumn of 1814, and in it was placed the loom perfected by Mr. Lowell, which differed much from the English looms. Mr. Lowell had neither plans nor models for his factory and looms, but in the year named the company set up a full set of machinery for weaving and spinning, there being seventeen hundred spindles; and this factory at Waltham was the first in the world, so far as record shows, in which all the processes involved in the manufacture of goods, from the raw material to the finished product, were carried on in one establishment by successive steps, mathematically considered, under one harmonious system. Mr. Francis C. Lowell, aided by Mr. Jackson, is unquestionably entitled to the credit of arranging this admirable system, and it is remarkable how few changes have been made in the arrangements established by him in this factory at Waltham.

So America furnished the stone which completed the industrial arch of the factory system of manufactures.

The growth of the factory system is well illustrated by the cotton manufacture. After the success of the power loom the cotton manufacture took rapid strides, both in Europe and America. The hand loom and the hand weaver were rapidly displaced. Factories sprung up on all the streams of Yorkshire and Lancashire, in England, while in this country the activity of the promoters of the industry won them wealth and won cities from barren pastures. They erected Lowell, Lawrence, Holyoke, Fall River, and many other thriving cities and towns, and now in this generation the industry is taking root upon the banks of southern streams.

This system obtained its first foothold in the United States during the period of embargo and the War of 1812.[1] The manufacture of cotton and wool passed rapidly from the household to the mill; but the methods of domestic and neighborhood industry continued to predominate, even in these industries, down to and including the decade between 1820 and 1830; and it was not until about 1840 that the factory method of manufacture extended itself widely to miscellaneous industries, and began rapidly to force from the market the handmade products with which every community had hitherto chiefly supplied itself. It seems probable that until about the year 1850 the bulk of general manufacturing done in the United States was carried on in the shop and the household, by the labor of the family or individual proprietors, with apprentice assistants, as contrasted with the present system of factory labor compensated by wages and assisted by power.

The census of 1850 is therefore the proper starting point for the comparative statistics of manufactures, although it is not possible to make any analysis of the figures returned by that census, which will determine with certainty the proportion of manufactures produced in factories, in distinction from the products of the household and of the neighborhood shop. Since the date of that census the relative value of the manufactured products of the shop and the household has steadily decreased, until, at the twelfth census, it represents but an insignificant part, say one thirteenth, of the total value of products.

It is not to be inferred, however, that no notable ventures in the direction of large factory production had been made in the United States prior to 1850. The city of Lowell, in Massachusetts, was founded in 1823, and from the start was preëminently a mill city. The Middlesex Mills were started there in 1830, with a capital of $500,000, which was soon increased to $1,000,000; the Lowell carpet mills were organized in 1828; and the Merrimac, the Hamilton, and other large cotton corporations were organized before 1830. The city of Lawrence was

[1] From the Twelfth Census Report on Manufactures, I, liii, the following additional data may be supplied. — Ed.

founded in 1845, starting with the great Bay State Mills, a wool-manufacturing corporation with $1,000,000 capital. This was followed in 1853 by the Pacific Mills, with $2,000,000 capital, which produced, according to the census of 1860, 11,000,000 yards of dress goods. The number of cotton spindles in operation in Massachusetts was, in round numbers, 340,000 in 1830, 624,000 in 1840, 1,288,000 in 1850, and 1,688,500 in 1860, showing the rapid development of cotton manufactures then in progress. The organization of great corporations in iron and steel, in foundry products of every variety, in leather, and in other industries, dates from the decade ending with 1860, or even earlier.

CHAPTER VI

THE MANUFACTURING INDUSTRIES OF THE UNITED STATES

1. The Advantages of the United States for Manufacturing Industries[1]

This rapid rise of the United States to the first position among manufacturing nations is attributable to certain distinct causes, natural and otherwise, five of which may be definitely formulated, as follows:

1. Agricultural resources.
2. Mineral resources.
3. Highly developed transportation facilities.
4. Freedom of trade between states and territories.
5. Freedom from inherited and over-conservative ideas.

A study of these causes affords an explanation of the great development of manufacturing in the United States in the past, as well as an indication of its possibilities in the future.

1. *Agricultural resources.* Most obvious among the natural advantages of the United States is its possession of every variety of soil, and every climate except the tropical. There is thus an abundance of food supplies of almost every form for the consumption of the people, and abundant raw agricultural materials for the use of manufactures. Both food supplies and agricultural materials for manufacture are cheaper, more abundant, and more varied in the United States than in any other manufacturing country. As a consequence the manufacturing development of the country has extended to nearly every form of industry which ministers to the comfort and necessities of man. In many localities the character of the manufactures has been determined largely by climatic conditions and by the character of products to which the soil of such localities is especially adapted.

[1] From Twelfth Census, Report on Manufactures, I, lvi–lix.

In the production of cotton, the leading textile staple, the United States is preëminent, furnishing 86.1 per cent of the world's production of cotton in 1899–1900. This is shown by Table I, which states the production of cotton in the leading countries of the world from 1890–1891 to 1899–1900.

TABLE I — *Production of cotton in 500-pound bales for the United States and other countries: 1890–1891 to 1899–1900*

	TOTAL	UNITED STATES	OTHER COUNTRIES
1899–1900	10,612,000	9,137,000	1,475,000
1898–1899	12,987,000	11,078,000	1,909,000
1897–1898	12,743,000	10,890,000	1,853,000
1896–1897	10,670,000	8,435,000	2,235,000
1895–1896	8,901,000	6,912,000	1,989,000
1894–1895	11,298,000	9,640,000	1,658,000
1893–1894	9,324,000	7,136,000	2,188,000
1892–1893	8,607,000	6,435,000	2,172,000
1891–1892	10,552,000	8,640,000	1,912,000
1890–1891	10,127,000	8,137,000	1,990,000

The forests of the United States furnish practically all the material required for the extensive wood-working industries of the country, and lumber valued at more than thirty million dollars is now exported annually. The only foreign sources upon which the United States relies for additional supplies of lumber are Canada, the West Indies, and Central and South America, the last two furnishing mahogany, rosewood, Spanish cedar, etc., required in the manufacture of pianos and fine furniture.

2. *Mineral resources.* In the second place, the United States produces nearly every mineral required for manufacturing industries. In most of these the supplies appear to be sufficient for years to come, and are obtainable at prices which compare favorably with prices in other parts of the world.

Coal, the basis of modern manufactures, exists in great abundance, and the fields are so widely distributed throughout the country as to afford easy transportation, by rail or water, to the

chief distributing points and manufacturing centers. The total production of coal in the United States in 1899 was 175,428,300 metric tons of bituminous coal, valued at $167,935,304, and 54,825,776 metric tons of anthracite coal, valued at $88,142,130. Reference should be made also to the extensive supplies of natural gas, a fuel which is utilized chiefly in manufacturing. In 1899 the estimated value of natural gas was $20,024,873. It is impossible to ascertain from the census reports the actual consumption of coal in manufacturing, but the reported cost of all fuel consumed in manufacturing during the census year was $205,320,632. The coal production of the United States is now larger than that of any other country, having passed the production of Great Britain for the first time in 1899. The world's estimated production of coal for 1890 and 1899 is shown in Table II.

TABLE II — *World's production of coal in metric tons,*[1] *by countries: 1890 and 1899*[2]

COUNTRIES	1899	1890
All countries	720,220,758	511,482,074
United States	230,254,076	143,167,843
Great Britain	223,689,796	184,580,765
Germany	135,824,427	89,290,834
Austria-Hungary	38,739,000	27,504,032
France	32,863,000	26,083,118
Belgium	21,917,740	20,365,960
Russia	13,104,000	6,016,525
Japan	. . . . .	2,653,000
All other countries	23,828,719	11,819,997

It appears from Table II that the production of coal in the United States has increased 60.8 per cent since 1890. In that year its production constituted 28 per cent of the world's estimated production, as compared with 32 per cent in 1899.

[1] Tons of 2204 pounds.

[2] United States Geological Survey, Mineral Resources, 1900, p. 316, *et seq.*

A supply of iron ore is equally important to the manufacturing development of a country. Table III shows that in this mineral, as in production of coal, the United States leads all countries.

TABLE III — *World's production of iron ore, in metric tons,*[1] *by countries: 1890 and 1899*[2]

COUNTRIES	1899	1890
All countries	79,003,522	57,098,278
United States	25,086,346	16,297,975
Great Britain	14,697,540	14,005,861
France	4,985,702	2,579,465
Germany and Luxemburg	17,989,635	11,406,132[3]
Belgium	201,445	202,431[4]
Spain	9,397,733	5,788,742
Sweden	2,435,200	941,241
Italy	236,549	173,489[4]
Austria-Hungary	3,293,003	2,200,000
Canada	67,711	69,429
India	61,717	([5])
Algeria	550,941	([5])
All other countries	. . . .	3,433,513[6]

It appears from Table III that the production of iron ore in the United States increased 53.9 per cent between 1890 and 1899, constituting 28.5 per cent of the world's estimated production in 1890 and 31.8 per cent in 1899. The stimulus these supplies of the ore have given to the manufacture of iron is seen in the remarkable advance in this industry during the last two decades. The United States passed Great Britain between 1880 and 1890, becoming the leading pig-iron-producing country in the world. Between 1890 and 1899 the increase in production in the United States was 4,418,000 tons, while in Great Britain it was 1,401,105 tons. The pig-iron production of the United

[1] Tons of 2204 pounds.
[2] United States Geological Survey, Mineral Resources, 1900, p. 91; 1890, p. 22.
[3] For 1887. [4] For 1889. [5] Not reported separately.
[6] Including Russia (1888) and Cuba (1890).

States in 1899 was 13,620,703 tons, or 34.1 per cent of the world's production.

A special advantage connected with the abundance of coal and iron ores in the United States is the fact that deposits of these minerals, together with deposits of limestone, which is used for fluxing the iron ore, are frequently found in the same locality, thus greatly facilitating their use in manufactures.

In the production of crude copper the advance of the United States to the front rank has been even more rapid and remarkable. Statistics of the world's output in 1850 place the copper production of all countries in that year at 52,250 tons, to which quantity Chile contributed 14,300 tons, Great Britain, 11,800 tons, Russia, 6000 tons, Japan, 3000 tons, and the United States only 650 tons. In 1899 the world's output of copper was estimated at 463,303 long tons, of which quantity the United States produced 253,870 long tons, or nearly four hundred times its production in 1850. The production in 1899 constituted 54.8 per cent of the world's estimated production, as given in Table IV, placing the United States first in this field also.

TABLE IV — *World's production of copper, in long tons, 1890 and 1899* [1]

	1899	1890
Total	463,303	272,620
Europe	92,993	79,952
North America	282,636	124,711
South America	32,730	33,960
Africa	6,490	6,570
Asia	27,560	17,972
Australasia	20,894	9,455

Of the 253,870 tons of copper produced in the United States in 1899, 123,413 tons were exported, leaving for home consumption a total of 130,457 tons. This extraordinary development

[1] United States Geological Survey, Mineral Resources, 1900, p. 186.

in the production of crude copper was due to the increase in the world's demand for copper, arising largely from the rapid development of the electrical industries. Partly because of the abundant supplies of crude copper, the United States has now taken first rank among the nations in the manufacture of copper goods.

There is also an abundance of most of the minor metals. The production of lead increased from 143,630 short tons in 1890 to 210,500 short tons in 1899; zinc production increased from 63,683 short tons in 1890 to 129,051 short tons in 1899; quicksilver from 22,926 flasks (of $76\frac{1}{2}$ pounds avoirdupois net) in 1890 to 30,454 flasks in 1899; and aluminum from 61,281 pounds (including aluminum alloys) in 1890 to 5,200,000 pounds in 1899. There have been corresponding increases in the production of practically all the non-metallic minerals consumed in manufactures.

On the other hand, the United States relies in constantly decreasing degree upon the ores of other countries. Where these are imported it is chiefly in the form of pigs and bars. The principal imports of this character for consumption during the fiscal year 1899 were 67,362,207 pounds of tin in bars, blocks, pigs, etc., valued at $11,843,357; 9,237,064 pounds of lead-bearing ores of all kinds, valued at $185,872; 4,760.5 pounds of platinum in ingots, bars, etc., valued at $951,154; 21,028 tons of nickel ore and matte, valued at $1,183,924; and 48,017 tons of copper ores, valued at $608,399.

3. *Transportation facilities.* Another important advantage possessed by manufacturers in the United States is the unusual facilities for transportation, particularly in the more thickly settled sections, where manufacturing industries predominate. Over eighteen thousand miles of navigable rivers not only facilitate transportation directly but cause competition with railroads, and thus make possible the cheap marketing of products. The coastwise trade of the United States exceeds that of any other country. It includes steamship lines to and from New York, Boston, Philadelphia, Baltimore, and other points, and between several of these cities and Charleston, Richmond, Savannah, Jacksonville, New Orleans, Galveston, and other southern ports.

In recent years navigation on the Great Lakes has become a most important factor in the internal traffic of the country. These lakes, with the Sault Ste. Marie and Canadian canals around the rapids of the St. Marys river, the St. Clair river, the Detroit river, and the Welland canal, allow unbroken navigation between Duluth and the eastern end of Lake Ontario, a distance of one thousand miles.

The development of freight traffic over this route has been so great during the past decade that in 1899 it had become the greatest internal water way in the world, having a ton mileage equal to nearly 40 per cent of that of the entire railroad system of the United States. In 1899 more than five times as many vessels passed through the United States and Canadian canals at Sault Ste. Marie as through the Suez canal. In the value of manufactured products the eight states which touch the water ways of the lake system rank first, second, third, fifth, eighth, ninth, tenth, and thirteenth, the aggregate value of products being $7,461,225,086, or 57.4 per cent of the total for the United States. This route thus borders upon the great manufacturing belt of the country. At its head are situated the most extensive mines of iron and copper and the largest hard-wood forests in North America. The average cost of transportation on the Great Lakes is now about six tenths of a mill per ton mile.

The railroad systems of the United States were constructed with great rapidity between 1860 and 1880, and their mileage now exceeds that of all of Europe combined. In 1899 the total mileage of the United States was 189,295 miles, as against 172,-621 in Europe, constituting 39.4 per cent of the entire railroad system of the world. These comparative statistics are not, however, an accurate index of the relative transportation facilities, because of the greater distances which separate the important railroad centers of the United States, and the sparsity of the population in many sections, compared with the density of population in the principal countries of Europe. Notwithstanding these disadvantages, the railroad systems of the United States are so highly organized and so efficiently managed that the transportation of freight by rail is cheaper than in any other country

There have been extraordinary reductions in freight rates during the past thirty years. The average rates per ton mile on the trunk railroads of the country have declined from about 2 cents to 6 mills, and on two of them to 3.6 mills. In 1868 the freight on wheat from Chicago to New York by rail was 42.6 cents per bushel, compared with 11.55 cents per bushel in 1898. In 1877 the cost of sending 100 pounds of wheat from St. Louis to New York was 41 cents, as compared with 22.3 cents in 1898.

4. *Freedom of interstate commerce.* These exceptional transportation facilities are utilized in the interchange of products between states and territories covering an area of 2,970,230 square miles of land surface, possessing a population of 75,994,575, and not separated by any commercial barrier. The mainland of the United States is the largest area in the civilized world which is thus unrestricted by customs, excises, or national prejudice; and its population possesses, because of its great collective wealth, a larger consuming capacity than that of any other nation. Statements of this character are confirmed by statistics for 1900, which show that the value of agricultural products was $4,739,118,752, of manufactured products $13,004,400,143, and of mining products $1,067,605,587, — a total of $18,811,-124,482, which was all consumed at home except the sum of $1,370,763,571, representing the value of all articles of domestic merchandise exported in the year 1900. As a partial offset to this deduction there may be added the imports of merchandise in the same year, the value of which was $849,941,184.

5. *Freedom from tradition.* Another advantage which has contributed to the rapid development of manufactures in the United States is the comparative freedom from inherited and over-conservative ideas. This country entered upon its industrial development unfettered by the old order of things, and with a tendency on the part of the people to seek the best and quickest way to accomplish every object.

In all of the European countries in which manufacturing is an important industry, the transition from the household to the factory system was hampered by guilds, elaborate national and local restrictions, and by the natural reluctance with which a

people accustomed for generations to fixed methods of work, in which they had acquired a large degree of skill, abandoned those methods for new ones. It was natural for the artisan classes to resist strenuously the introduction of machinery into the industries by which they obtained their livelihood. It was natural, also, that in spite of the superior advantages of machine methods, hand processes of manufacture should still continue side by side with them, in many industries in which machine work had long since usurped the whole field in the United States. This inherited and intuitive adherence to old-fashioned methods is illustrated by the silk industry in France, where the hand loom still predominates over the power loom; and by the tin-plate industry in Wales, where, until recently, hand methods of production were still in force.

In the United States the tendency of the artisan class to abandon the slow hand processes has been as strong as the tendency elsewhere has been to adhere to them. Moreover, there has developed among the laboring classes in the United States a mobility such as is unknown elsewhere in the world. This has made it possible to attract to any point in the country the skilled labor required to develop any branch of industry.

In this summary of the advantages of the United States as a manufacturing nation, no allusion has been made to the influence of national legislation upon material development; nor is it necessary to refer in a statistical report to the character of the American people, to their social, educational, and political environment, to their skill and efficiency as tool users, to the quality and productivity of the machines and tools they employ, or to the effective organization of business for economizing all productive and distributive forces. These are subjects which belong rather to economic study than to a statistical presentation of facts upon which the conclusions of economists are based. Nevertheless, there can be no complete understanding of the remarkable development of the United States during the nineteenth century unless all these things are taken into consideration. More particularly is this true in respect to the use of tools, machinery, and labor-saving devices of all kinds. It is

the judgment of foreign commentators upon American development, that in the adaptation of machinery to all branches of industry this country displays a facility greater than is shown anywhere else; that the number and variety of labor-saving machines employed here is larger than in any other manufacturing country; and that in many industries the subdivision of labor has reached a minuteness and a degree of perfection not elsewhere equaled.[1]

At the census of 1880 the system of interchangeable mechanism, so called, which is distinctively and peculiarly American in its origin, was made the subject of a special and exhaustive report compiled under the direction of Professor W. P. Trowbridge of New York. In transmitting this report Professor Trowbridge said:

> The general growth of the "interchangeable system" in manufacturing has had an influence in the development of manufacturing, agricultural, and other industries which but few have hitherto appreciated. It may not be too much to say that, in some respects, this system has been one of the chief influences in the rapid increase in the national wealth. Two of the great industries which constitute the basis of this wealth — agriculture and manufactures — depend now largely upon the existence of this remarkable feature in manufacturing, which has reached its highest development in this country. The growth of the system is due to the inventive characteristics of our people and their peculiar habit of seeking the best and most simple mechanical methods of accomplishing results by machinery, untrammeled by traditions or hereditary habits and customs.

[1] *The Journal of the British Board of Trade* for December 20, 1900, prints a report by Mr. Seymour Bell, British commercial agent at Washington, D.C., on the use of labor-saving devices in American factories. Mr. Bell states that "any one visiting American factories cannot but be struck by three things which are very conspicuous. They are: (1) the way in which machinery is used, and all sorts of devices are employed in order to save, wherever possible, manual labor; (2) the division of labor; and (3) the methods employed for handling large quantities of material. Probably in no country in the world is the principle of division of labor carried out to a greater extent, or with greater success, than it is in the United States. That the results obtained justify the theory is too evident everywhere to be disputed. It is only necessary to visit, for instance, a musical-instrument factory, and see the thousands of instruments that are being made, and the millions of small pieces being handled which are necessary to complete them; or, again, a boot factory where some four hundred hands are turning out as many as three thousand pairs of boots and shoes a day."

2. The Localization of Industry[1]

The causes of localization. Seven of the various advantages which give rise to the localization of industries may be stated as follows: (1) nearness to materials; (2) nearness to markets; (3) water power; (4) a favorable climate; (5) a supply of labor; (6) capital available for investment in manufactures; (7) the momentum of an early start.

All of these advantages except the last operate to prescribe the broad area within which an industry is economically possible. The exact point within this area at which it shall be actual — i.e. the center of localization — is usually the result of a more or less chance decision made in the early days of the region's settlement by some pioneer in the industry. Once successfully started, the manufacture gains a momentum which enables it to persist in the original locality long after the earlier general advantages it possessed have disappeared. The industries shown in Tables[2] LXXVII–CXXXVI were selected partly because their localization illustrates the advantages here mentioned. It should be noticed, however, that in almost every case several of the above causes may be assigned, the actual localization being thus often a resultant of forces which act in nearly opposite directions.

1. *Nearness to materials.* The localization of several of the industries included in the above tables illustrates this advantage, — the paper industry near the spruce and poplar forests; the tanning industry near the chief tanning materials; slaughtering and meat packing near the stock-raising centers; the manufacture of agricultural implements near the great hardwood forests and the iron-producing centers; the pottery industry near its clay; the recent growth of cotton manufacturing near the cotton fields; and the beginnings of shoe manufacturing in Massachusetts near the supply of leather. Other striking illustrations of the effect of materials upon localization are

[1] From Twelfth Census, Report on Manufactures, I, ccx–ccxiv.

[2] The census presents a number of tables which it is impossible to reproduce here. — Ed.

shown in Tables CXXXVII and CXXXVIII, from which it appears that, measured by the value of products, 64.4 per cent of the oyster canning and preserving was carried on in Baltimore; 48.1 per cent of the coke was manufactured in the Connellsville district; 22.7 per cent of the chewing and smoking tobacco and snuff was manufactured in St. Louis; and 15 per cent of the fruit and vegetable canning and preserving was done in Baltimore.

Fuel is regarded, for census purposes, as a material of manufacture, and the influence of its supply is very marked in the localization of the glass industry near the natural-gas wells, and in the iron industry in Pennsylvania and Alabama.

2. *Nearness to markets.* This is an important factor in the localization of all industries, its influence upon the localization of manufacturing in general being especially apparent. Nearly 48 per cent of the manufacturing of the country is in Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania, — not so much because there is better water power or more abundant material for manufactures in these states, but very largely because the greatest population was there when the manufacturing developments of the country began. The influence of the market in causing a migration of manufacturing in general may be observed by comparing the movement of the center of manufactures and of the center of population since 1850, as shown elsewhere. The center of manufactures has moved steadily westward, following roughly the movement of the center of population.

Eight of the above fifteen selected industries are localized east of the Alleghenies chiefly because they became established in this section at a time when it was the only important market in the country. In certain of these industries the influence of the market upon the localization has been especially marked, i.e. the iron and steel industry in Illinois, the manufacture of agricultural implements, the paper and pulp manufacture, and the jewelry and silk industries.

Nearness to materials and nearness to markets, in so far as these expressions are used with reference to an effect upon

localization, mean more than mere geographical distance. They include the general accessibility to materials or markets, affected as this is by the supply or lack of good and cheap means of communication. Water ways have thus had a tremendous influence upon the localization of industries, for they have allowed localities through which they passed to make an early start in manufacturing, and, by the momentum thus acquired, to retain their prominence in many cases, even after the building of railroads has removed the special advantages which they at first possessed.

It is evident, moreover, that the importance of the two advantages just explained varies greatly among the several industries, according as their products are easily and cheaply transportable or are transported only with great difficulty and at a great expense. In all industries where the product is not transportable, such, for example, as the construction of houses, the market controls the localization absolutely. It is plain, also, that the power of materials and market over industry is less, just in proportion as the materials and products are more easily and more cheaply shipped. From the manufacturer's standpoint it is always a counting of the costs of shipment. If these are heavy, the industry tends to locate where the amount of transportation will be least, but if they are light, the influence of materials and market is so slight that it often disappears altogether. The words "heavy" and "light," as used in this connection, are not to be understood in an absolute sense, but relative to the value of the material or product transported. A cheap and heavy raw material, such as clay, will be carried only a very short distance. Transportation charges, after a few hundred miles, would constitute too large a part of the cost of manufacture. But an equal weight of this same clay, after its value has been trebled by being converted into pottery, might be carried a long distance before the shipping costs would become prohibitory.

The industries mentioned above as influenced largely by their market and the source of materials used, — paper, iron and steel, slaughtering, pottery, and leather, — are those in which the

materials or products have a great weight or bulk in comparison with their value, and in which, therefore, freight charges are a very important element of costs.

3. *Water power.* This has been in the past a very important advantage, but to-day its influence upon localization of industries is not very apparent. Naturally this influence was greatest before the days of steam. All industries requiring power grouped themselves along those water ways which had a good natural fall. This early impetus, combined with forces to be described later, has tended to perpetuate such industries in their original locations, even when steam has become more important as a source of power than water.

It is interesting in this connection to compare the manufacture of cotton goods with the manufacture of shoes. Power has been applied to some branches of the cotton manufacture for more than a hundred years, while shoe manufacturing has been a power industry less than half that time. Largely as a result of this fact water supplies 31 per cent of the power used in the cotton industry to-day and but 4.6 per cent of that used in the manufacture of shoes; that is to say, the localization of both industries began in the early days, but the manufacture of shoes, being for years a hand industry, was independent of water power, while the cotton manufacture, of necessity, sought the water ways. When the necessity for power in the shoe manufacture arose, the industry was too thoroughly established away from the sources of water power, and recourse was had to steam. Water power has been an important factor in the localization of three of the other industries specified above, — silk goods, hosiery and knit goods, and the pulp manufacture.

4. *A favorable climate.* This has also an influence which is discernible in the localization of industries. The influence of a moist climate, which is also even throughout the day, upon cotton spinning in New Bedford and Fall River, Massachusetts, has been mentioned above. More often, however, the advantage of a favorable climate makes itself felt through its invigorating effect on labor.

5. *A supply of labor.* Two other advantages must be mentioned, for there are times when they have considerable weight. These are the supply of labor and the supply of capital and credit facilities. The "supply of labor" is something far from mobile. It is very human, with all the attachments of home and friends. It can be easily lured into a new industry which is established "at home" or near by, but the wages paid must be considerably greater to attract it into other sections. Manufacturing industries tend, therefore, to become established in a section where there is a good supply of labor. The New England towns have been preëminently of this type. All about them were farms which had reached the point of exhaustion, and could therefore employ profitably only a small part of the rising generation. The surplus labor thus created gravitated naturally to the nearest town in search of employment, and the early development of numerous manufactures was thus made easy. For a similar reason there can be no extensive manufacture in those parts of the West where the increasing population is mostly absorbed in agriculture, which is still incompletely developed.

6. *A supply of capital.* It is almost equally important to have a supply of local capital. Although most large enterprises are now financed from the great financial centers, the plants are located usually in places which have already become industrial centers in a smaller way through the efforts of the people there, and by means of their money. The cotton mills which are springing up through the South just now illustrate the tendency of a town to own itself in the early stages of its industrial life, and Fall River affords a most remarkable illustration of the perseverance of this tendency. A prosperous town, therefore, where the people are "making money," is, in so far, a favorable locality for the establishment of manufacturing industries of some sort. Outside capital will undoubtedly be solicited, but it will be obtained more easily and more surely after the people themselves "have taken largely of the stock." Banking facilities exert a similar influence, making the community's capital more available for investment than it would otherwise be. All of these considerations have operated to favor the early

development of manufacturing centers in New England and the Middle Atlantic States, agriculture absorbing a large share of the available local capital in the Southern and Western states. One of the causes which led to the establishment of the cotton manufacture in New Bedford about 1850 was the supply of local capital set free about that time by the decline in the whaling industry.

7. *The momentum of an early start.* The various advantages which have been described thus far can be expressed in dollars and cents. The places possessing these advantages attract manufacturers on account of the comparatively low cost there of producing and marketing goods. But these advantages in almost all cases account for localization only in its broader sense. They prescribe an industry's possible area, but they fail to explain the most marked form of localization, — that within a single city or town, or group of cities and towns.

Somewhere within the possible area — made such because of the advantages just described — an enterprising man started the pioneer establishment of a certain industry. Why was this place chosen rather than any other within the possible area? Or why was this industry chosen rather than any other for which this place was suited? This is the first problem, and the second follows naturally: Why, after the first factory had become established, was it to the advantage of competitors to choose the same spot for their establishments, rather than other localities within the possible area? The solution of the first problem in the case of any industry is to be found by reference to its early history in this country.

In most cases it will be found that the original establishment of an industry in a locality was largely a matter of chance. The shoe industry in Lynn, Massachusetts, is a case in point. In the early colonial days this settlement had its quota of cobblers, who made as well as repaired the shoes for the region thereabout, but did not attempt a broader market. In 1750, however, John Adams Dagyr, a Welshman and a skilled shoemaker, settled in Lynn and began to teach his apprentices the art of fine shoemaking. It soon became known that shoes were

being made in Lynn nearly as good as the best made abroad, and as early as 1764 Dagyr was spoken of in a Boston newspaper as "the celebrated shoemaker of Essex." Had this man settled in Roxbury, Massachusetts, rather than Lynn, the bias toward shoe manufacturing might have become established in that quarter, and Roxbury instead of Lynn might to-day be one of the three great shoe centers of the United States.

The nature of many a city's industry has been shaped in just this way in the early days of its history by the decision of one man. Instances of this have been cited in the preceding paragraphs, in connection with the localization of collars and cuffs, hosiery and knit goods, jewelry, gloves, and fur hats.

The decision of the pioneer in an industry at a given point rests on various grounds. He establishes usually an industry with which he is familiar because of experience obtained elsewhere. Several of the above-selected industries have been established in their respective localities by the emigration from Europe of individual skilled workmen or groups of skilled workmen. The town where such a man chances to settle is taken for a location of the industry, in most cases without much questioning whether or not it is better adapted for it than any other town. But if he searches for a suitable place, his chance acquaintance with one locality, or the offer of a friend to assist him if he establishes there, often influences his decision at the expense of another and perhaps more suitable locality where he has never visited, or where no acquaintance appeared to offer inducements. In many instances towns offer inducements to manufacturers, such as exemption from taxation for a period of years, and such efforts have often been successful in building up an entirely new industry in the town.

But if the industry is to be perpetuated and to increase in the locality, the original establishment must succeed, for it is the influence of its success which causes other establishments to spring up around it. In the early history of every industry numerous enterprises fail, not so much because of the unfitness of the locality chosen, as because of the unfitness of the man who attempts to carry on the industry at that point.

The habit of industrial imitation. It is only after the first enterprise has succeeded in any locality that the real localizing process begins. The mainspring of this process is the habit of industrial imitation, — a habit as powerful as it is universal, and so important in this connection that it warrants a somewhat closer analysis.

It has been shown above that one of the normal requisites of an industrial locality is a good supply of local labor and local capital. Suppose the enterprising man establishes himself in such a community and succeeds there. His success proves that the economic conditions are favorable, — that he is within the possible area of that industry. But it does more; it creates a local bias toward this particular industry. This bias affects all three classes necessary to its expansion, — entrepreneurs, capitalists, and laborers.

In the first place entrepreneurs naturally choose the existing industry rather than establish a new one. On the assumption of a prosperous and growing town, there is continually arising a class of enterprising men who wish to embark in manufacturing for themselves, and they naturally choose an industry with which they are familiar, — one which they have actually seen succeed. It requires courage to be an industrial pioneer, — more courage, in fact, than most men possess. They have read, perhaps, of much larger profits being made in branches of manufacturing not carried on in their neighborhood; they may have visited towns in another part of the country where some such industry has been very successful, and they are tempted to establish this industry in their town rather than to imitate the establishment which has been operating there successfully. The chances are great, however, that they will resist the temptation of larger profits, in favor of what they regard as surer profits, and will choose the local industry. The other industry may be just as safe, but the probability of success if they follow the beaten path has been emphasized to them each day as they have watched the smoking chimney of the local factory, and have noticed the rise of the proprietor from moderate circumstances to comparative affluence. Their choice of this industry becomes,

therefore, almost inevitable. Moreover, it is probable that the men who thus launch out for themselves have been employees or foremen in the local factory. They are relatives, perhaps, of the proprietor, and are familiar with all the details of this industry, while in any other they would have all to learn. This last feature has been illustrated in fully half of the industries specified above.

In the second place, the capital needed to finance the new establishment — in addition to that supplied by the new entrepreneur himself — is much more easily obtained if the new establishment is to produce the same line of goods as the one already in existence. If a loan is desired for the establishment of an outside and less familiar industry, there is naturally a raising of the interest rate as a means of insurance; or the stock, if offered for sale, will for the same reason sell at a lower figure.[1]

In the third place, the best grade of local labor prefers to have employment in an industry which seems to offer a future rather than in one which seems in the nature of an experiment. This influence is comparatively slight, however, for all ordinary labor takes such employment as is offered without much questioning.

Economic advantages of specialized centers. All the above decisions — the decision of the pioneer in the industry, and the decisions of the few who follow immediately in his steps — seem to be made with but little consideration of the economic advantages which the locality chosen may possess for carrying on the industry in question, — i.e. the possibility of producing cheaper at this point than elsewhere, or being better able there to market the products. Very quickly, however, certain decided economic advantages emerge. Workmen, skilled in the specialty for which the center begins to be known, flock there and wait their chance "to be taken on at one of the mills." In

[1] The opposition of the manufacturer or the manufactures already established in the industry must, however, be counted on in many cases, especially if the products made are for sale in a comparatively limited market. As far as such opposition seems likely to develop, the advantage above described is counteracted, local investors becoming doubtful regarding the safety of their money under such circumstances.

many cases an immigration of skilled labor from corresponding centers abroad sets in. East Liverpool, Ohio, was at one time chiefly an English town as the result of such immigration. A pool of specially skilled labor is thus formed, which acts as a powerful inducement to the expansion of the industry from within, while at the same time it draws prospective manufacturers to this center from without.

The use of machinery has, however, tended to lessen the importance of a specially skilled labor supply. In proportion as an industry becomes automatic its localization becomes independent of its supply of special labor. It is interesting to note in this connection that six of the fifteen industries shown in Tables LXXVII to CXXXVI, on account of their marked localization, are industries in which hand work constituted for many years the most important part of the operations. In some instances, such as the glove, collar, and hat manufacturing, hand work is still an important factor, while in the manufacture of boots and shoes hand work persisted to a large extent as late as 1870.

In a specialized community of this sort the contact of workmen and employers with each other results in a mutual improvement in manufacturing methods. Laborers "talk shop" more or less when not at work, and the devices adopted in one establishment for making the work easier are soon adopted in all. Similarly, it is easy for a manufacturer in such a place to note the experiments with patented improvements carried on in another establishment, and to adopt such improvements just as soon as their value is demonstrated, by paying the royalty demanded.

In the course of time another advantage arises in such a specialized center — the possibility of subdividing the processes of manufacture among several establishments, — a division of labor among employers. In the Massachusetts shoe cities, for example, there are establishments which make only uppers, and others which make only "findings" (counters, shanks, heel stiffeners, etc.). Soon, also, subsidiary industries spring up for the supply of the special machinery and tools required. As a result,

new and up-to-date tools and machinery may be had in such centers with the least possible delay, and existing machinery may be kept continually in repair.

Thus a town's specialization increases its supply of specialized labor and specialized machinery. These in turn react to increase the specialization of the town. Success breeds success in an almost geometrical ratio. Cause and effect propel each other in a continually expanding circle, the self-created local advantages becoming in time so powerful that they entirely neutralize the greater general advantages of location which other localities may have come to possess.

Conclusion. In conclusion it should be noted that in proportion as a country develops industrially and upon a larger scale; in proportion, moreover, as there is a mobility of labor and freedom from the influence of inherited and over-conservative ideas, the localization of industries tends to be governed increasingly by purely economic considerations and less by the fortuitous considerations which accounted in many cases for localization in earlier years. The influence of industrial combination in this direction has already become marked. The system of uniform bookkeeping, introduced in many such combinations, enables managers to know accurately the comparative advantages of several localities for the industry in question, and to redistribute their production accordingly.

3. The Geographical Distribution of Manufactures[1]

An interesting feature of the manufacturing development of the United States is brought out by grouping the states along geographic lines.

For such a grouping the twelfth census has employed the old and familiar divisions. The New England States are commonly regarded as a geographic unit, ordinary commercial use associating these six states as a distinct group governed by conditions peculiar to themselves. The same is true of the Middle States, although there is less certainty in the public mind as to

[1] From Twelfth Census, Report on Manufactures, I, clxxi–clxxviii.

the states which actually constitute this group. The Southern States comprise another distinct geographic unit, and a more accurate conception of their industrial progress is obtained by associating them in one group than by dividing them into the South Atlantic and South Central groups. The Central States in the Middle West, often called the prairie states, are a homogeneous territory whose industrial development has been nearly uniform. The same is true of the Western States, known as the Rocky Mountain group, most of which have advanced into statehood within a comparatively recent period. Finally there are the three states comprising the Pacific group, whose industrial development has been governed by conditions altogether different from those prevailing elsewhere.[1]

The actual increase between 1860 and 1870 was somewhat less, and the increase between 1870 and 1880 somewhat greater, than the figures indicate, since the values reported in 1870 were based upon a paper currency, while those of 1860 and 1880 were gold values.

1. *The Middle States.* The tables show that during the entire half century the Middle States occupied the foremost position in manufactures. In 1850 the gross value of products of these states was $472,876,861, constituting 46.4 per cent, or very nearly one half, of the gross value of products for the entire Union. In 1900 the value of products had grown to $4,957,874,935, but the proportion was only 38 per cent of the total for the United States. The relative proportion produced by the Middle States has thus undergone but slight variation in the half century, the growth of these states having been almost on an equality with the growth of the entire Union. This is due to the continuous advance of the great states of New York and Pennsylvania, in which are situated two of the largest manufacturing centers, and to the increasing number of small manufacturing cities, whose growth has been steady and uninterrupted.

2. *The New England States.* In 1850 the New England States returned a product of $283,372,747; in 1900 the value

[1] Then follow tables which can be reproduced only in part. The essential facts are shown in the table on opposite page. — Ed.

Distribution of Manufactures by Geographical Divisions

	Divisions	Date of Census	Number of Establishments	Capital	Value of Products, including Custom Work and Repairing	
1	United States	1900	512,734	$9,846,628,564	$13,039,279,566	1
		1890	355,415	6,525,156,486	9,372,437,283	
		1880	253,852	2,790,272,606	5,369,579,191	
		1870	252,148	2,118,208,769	4,232,325,442	
		1860	140,433	1,009,855,715	1,885,861,676	
		1850	123,025	533,245,351	1,019,106,616	
2	New England States	1900	57,941	1,594,142,061	1,875,792,081	2
		1890	48,392	1,176,078,498	1,498,797,507	
		1880	31,581	624,228,061	1,106,158,303	
		1870	32,352	489,666,032	1,009,116,772	
		1860	20,671	257,477,783	468,599,287	
		1850	22,487	165,695,259	283,372,747	
3	Middle States	1900	160,374	3,951,914,758	4,957,874,935	3
		1890	125,187	2,554,437,860	3,646,692,021	
		1880	89,603	1,174,934,893	2,219,072,594	
		1870	87,606	905,722,631	1,769,003,895	
		1860	53,287	435,061,964	802,338,392	
		1850	54,024	235,586,443	472,876,861	
4	Southern States	1900	84,256	953,850,192	1,184,398,684	4
		1890	46,455	510,776,260	706,844,392	
		1880	36,938	192,949,654	338,791,898	
		1870	38,759	139,160,713	277,720,637	
		1860	24,081	116,231,764	193,462,521	
		1850	20,505	67,104,157	100,872,071	
5	Central States	1900	166,454	2,750,223,234	4,000,817,987	5
		1890	113,050	1,940,088,802	2,945,240,950	
		1880	81,999	699,587,944	1,502,637,308	
		1870	84,392	516,709,757	1,055,419,013	
		1860	32,884	172,604,454	341,710,554	
		1850	24,921	62,896,995	146,348,545	
6	Western States	1900	23,950	289,889,077	555,482,428	6
		1890	11,332	130,380,451	278,199,781	
		1880	6,505	27,813,717	72,518,749	
		1870	3,817	20,950,911	44,742,130	
		1860	681	3,803,216	7,114,012	
		1850	37	112,700	540,230	
7	Pacific States	1900	19,301	291,467,178	435,670,399	7
		1890	10,989	213,288,888	296,604,192	
		1880	7,226	70,758,337	130,400,339	
		1870	5,222	45,998,725	76,322,995	
		1860	8,829	24,676,534	72,636,910	
		1850	1,055	1,849,797	15,099,162	
8	Outlying districts	1900	458	15,142,064	29,243,052	8
		1890	10	105,727	58,440	

of products had grown to $1,875,792,081, an increase of over sixfold. Notwithstanding this enormous increase, the per cent of the total value of manufactured products of the New England States to that reported for the whole United States has decreased continuously from 27.8 to 14.4. These states, covering an area of 66,465 square miles, or only 2.2 per cent of the area of the mainland of the United States, exclusive of Alaska, do not grow sufficient food on their rather barren soil to supply their own population, and possess no advantages in the way of local supplies of raw materials. Under these conditions the steady advance of their manufacturing industries is indicative of the enterprise of their citizens, and of the unusual extent to which their capital has been invested and reinvested in manufactures. The only natural advantages of New England are an abundance of water power, conveniently located for manufacturing purposes, and a seacoast upon which fine harbors abound, greatly facilitating the interchange of products. These natural conditions have assisted in building up a chain of manufacturing cities extending along the seacoast from Biddeford, in Maine, to Bridgeport in Connecticut, while the more important inland manufacturing cities, which owe their development to their excellent water power, are mostly located at short distances from the coast.

Since the earlier days the industries of New England have undergone a striking evolution, involving a gradual shifting of the manufacture of the heavier iron and steel products to points nearer the raw materials and fuel supplies; but all the New England States have clung tenaciously and successfully to the manufactures which originally gave them their chief prominence, namely, the textile industries and the manufacture of the machinery required in these industries. Thus New England makes the greater part of the spindles and looms used in the cotton manufacture of the country, and almost as great a proportion of the machinery for wool manufacture. Its preëminence extends to many other branches of machinery, but more particularly the making of fine tools and delicate instruments.

3. *The Central States.* The most striking phenomenon of the manufacturing development of the United States in the half

century has been the rapid advance of the Central States from a comparatively insignificant position to second place among the geographic groups. In 1850 the states of Illinois, Indiana, and Ohio were occupied chiefly with agricultural pursuits, the value of their manufactured products aggregating but $146,348,545, or 14.4 per cent of the total value of products. In 1900 they reported products valued at $4,000,817,987, comprising 30.7 per cent of the total value of products of the whole country, as contrasted with 38 per cent in the Middle States, which in 1850 produced 46.4 per cent of the total value. Nowhere else in the world has there been so rapid a transformation of the occupations of the population. A great variety of causes has contributed to this development and stimulated it. The agricultural resources of the Central States are unsurpassed, their mineral deposits are hardly inferior to those of any other section, their transportation facilities by rivers, by the Great Lakes, and more recently by railroads have rapidly developed. Very early in the history of these commonwealths their citizens began to establish manufacturing plants, in order to use their own materials and to supply their own needs. These establishments were often on a very large scale, and modern in equipment and construction, utilizing the latest improvements in machinery and methods. Supplies for the development of the vast agricultural districts within or contiguous to their boundaries have from the first been produced largely by these establishments. This has been especially true in the manufacture of agricultural implements of every description, so important in the development of the West, and in the production of the wagons, carriages, and tools required on farms. Thus the Central States have been to a large extent self-sustaining in their development, encouraging their manufactures, which, in turn, have nourished and developed their agriculture and their mines.

4. *The Southern States.* The industrial development of the South, during the decade just closed, has been along lines so different from those prevailing in other parts of the country that it calls for special and more extended treatment. In this group of states, during the census year of 1900, there were 84,256

establishments engaged in manufacturing and mechanical industries, with a capital amounting to $953,850,192, giving employment to 656,169 wage earners, or 2.9 per cent of the total population of that section, and yielding products valued at $1,184,398,684, or 9.1 per cent of the total for the country. In 1850 the Southern States produced 9.9 per cent of the manufactured products of the United States.

During the decade ending with 1870 only a very small proportion of the increase of 124.4 per cent in the manufactured products of the United States was reported by the Southern States. This is accounted for by the fact that the South was struggling with debts, and with the general wreck and ruin caused by the Civil War. It had been unable to regain the fortunes which were lost in that struggle, and was without credit. Its railroad lines were lacking in system and its labor was disorganized. In 1880 the products of this section formed 6.3 per cent of the total value of the products of the country. Since that time the proportion has steadily increased, until at the census of 1900 it reached 9.1 per cent, eight tenths of one per cent below the proportion in 1850. During the half century the increase in value of products was nearly twelvefold. The last two decades brought to the South not only capital and improved machinery but skilled workmen as well, and firmly established the cotton mill as a factor in the development of the South.

The oldest and most important industries in this section find their raw material at hand in the products of the farm, the forest, and the mine. This points to an agricultural and mining development rather than to a distinctively manufacturing one. Cotton is ginned; wheat, corn, and rice milled; sugar cane crushed; turpentine and rosin distilled; timber cut; and iron ore smelted. The processes involved in these crude manufactures are simple and require no special skill. Even the farm laborer is familiar with them, and passes without difficulty from the field to the mill. Until recently, therefore, the manufactures of the South have been confined principally to such industries.

In manufacturing processes proper a higher degree of skill and a greater differentiation of labor are required, and profits depend less upon accessibility and cheapness of material than on technical training. Capital was attracted to this section by the abundance of material and the cheapness of labor, and the first true manufacturing processes were carried on as carefully conducted experimental enterprises. The recent increase in cotton mills, cotton-seed oil and petroleum refineries, sugar factories, and iron and steel works shows that a considerable advance has now been made in manufacturing proper.

The distribution of the increase in the population of the Southern States indicates in a marked manner the development of manufacturing and its draft upon labor which was formerly engaged in agriculture. During the decade the increase of the South in total population was 24.4 per cent; in the rural population, 18.3 per cent; in the population of cities of four thousand and over, 38.4 per cent; and in incorporated towns of less than four thousand inhabitants, 52.8 per cent, showing a general tendency toward concentration in towns and cities. A considerable amount of skilled white labor avoids competition with cheap labor by bringing its intelligence to the mills. During the last two decades all these influences have concentrated themselves upon cotton manufacture, making it the most important manufacturing industry in the South.

During the census year there were in the Southern States 401 establishments engaged in cotton manufacturing, with a capital of $124,596,874, 97,559 wage earners, and products valued at $95,002,059. At the census of 1890 these states had 239 cotton mills, with a capital of $53,827,303, 36,415 wage earners, and products to the value of $41,513,711. This is an increase of $53,488,348, or 128.8 per cent, in value of products. During the decades from 1870 to 1900 the rates of increase in the value of the cotton-mill products of the Southern States were 43.8, 153.8, and 128.8 per cent respectively, as against 5.8, 28.9, and 7.8 per cent in all other states. In the New England States the increases during the same decades were 14.7, 26.3, and 5.8 per cent respectively. During the last decade the increase

in the value of all cotton-mill products in the United States was $71,218,596; of this increase, $53,488,348, or 75.1 per cent, was shown by the Southern States.

The number of spindles in southern mills has not increased in so great a ratio as the value of products. The total increase during the decade in the number of spindles in the United States was 4,862,849, of which 2,745,988, or 56.5 per cent, were in southern mills. During the last three decades the rates of increase in the number of spindles in southern mills were 65.3, 186.7, and 176.7 per cent, respectively, as against 48.6, 24.9, and 16.8 per cent in all other states. In the Southern States the average consumption of cotton per spindle was 164.4 pounds, as against 72.9 pounds in the New England States; the value of products per spindle was $22.09 in the Southern States, as against $14.91 in New England. It thus appears that from a pound of raw cotton the southern mills produced a product valued at 13.4 cents, while from the same quantity of raw material the New England mills obtained a product valued at 20.4 cents. The difference in the output per spindle of the two sections was caused by the difference in the grade of goods produced by the mills. The coarser grades of goods manufactured by southern mills require less twisting in their manufacture, making the spindle consumption of cotton greater. The longer hours of employment prevailing in the Southern States also increase the consumption per spindle; for example, in Massachusetts the labor day is ten hours, while in Georgia and the Carolinas it is eleven.

The distinctively southern industries, such as cotton ginning, rice milling, molasses making, sugar refining, and turpentine distilling, showed a decided and vigorous growth during the last decade. In all of these industries except turpentine distilling and flour and grist milling the production fluctuates with the crops immediately supplying them, and thus indicates the agricultural prosperity of the section.

The lumber and timber industry is increasing more rapidly in the South than in any other part of the country. In 1900 there were 13,777 establishments, with a capital of $179,319,952, and

118,491 wage earners. The value of products increased from $28,156,671 in 1870, to $185,727,890 in 1900, or 559.6 per cent. The increases for the three decades were 35.4, 134, and 108.2 per cent, respectively. During the last decade, the Southern States showed an increase of $96,520,165, or 74.9 per cent of the increase of $128,875,602 for the United States.

The lumber industry is fairly well distributed throughout the South, the five leading states being Arkansas, Tennessee, Louisiana, Texas, and Mississippi, which rank in the order named. Arkansas easily leads, with products valued at $23,959,983.

In 1900, 1169 tobacco factories reported $36,773,751 capital, 37,307 wage earners, and products valued at $78,091,650. A comparison with 1890 is not practicable, as three Southern States were then grouped with "all other states," and cannot be separated. In 1880 the value of products of the tobacco manufacture in the South was $25,938,212; in 1900 it was $78,091,650, showing an increase of $52,153,438, or 201.1 per cent. This increase was 31.7 per cent of the increase of $164,406,380 for the United States. The Southern States leading in tobacco manufacture were Kentucky, Virginia, North Carolina, and Florida, which rank in that order. Kentucky led in the manufacture of chewing and smoking tobacco and snuff, with North Carolina a close second; Florida, in the manufacture of cigars and cigarettes; and Virginia, in the stemming and rehandling of tobacco.

In 1900 the Southern States reported all but six of the establishments engaged in the manufacture of cotton-seed oil and cake. There were 369 establishments in the United States, with $34,451,461 capital, 11,007 wage earners, and products valued at $58,726,632. In 1890 there were 119 cotton-seed-oil mills, with $12,808,996 capital, 5906 wage earners, and products valued at $19,335,947, showing an increase in value of products of $39,390,685, or 203.7 per cent.

5. *The Western States.* The manufacturing development of the Rocky Mountain group of states has been very marked. In 1850 most of this vast area of fertile lands, so rich in mineral deposits, was quite unused, and census enumerators found there

nothing in the way of manufactures proper, although $540,230 was reported as the value of products of the neighborhood industries. During the last half century the manufacturing operations most closely connected with mining found their way into this section, and the smelting and refining of ores constituted the bulk of the $555,482,428 reported in 1900 as the value of the products of these states, which produced 4.3 per cent of the total value of products of the United States.

6. *The Pacific States.* The Pacific States have had a growth peculiar to themselves, because of their comparative isolation from the rest of the Union, which forces them to depend largely upon their own resources. When the census of 1850 was taken gold had just been discovered in California, and the situation there was similar to that above described as existing in the Rocky Mountain States. The entire manufacturing development of the Pacific States has taken place, therefore, in the last fifty years. The total value of products in 1900 ($435,670,399) constituted 3.3 per cent of the value of products for the United States. The industrial conditions in this group of states in 1900, considering the value but not the character of products, was about the same as that of the New England States in 1860 and of the Middle States in 1850. From this point of view the growth of the Pacific group has been remarkable. The character of its industries is still determined largely by its natural resources of farm, forest, and mine; but the recent wars in the Orient, resulting in the opening of new markets, gave to the industries of this section a great stimulus which had only begun to be felt at the time the twelfth census was taken.

4. The Organization of American Manufactures[1]

1. *Individual ownership.* It appears that of the four forms of organization differentiated in the table, that of the single employer represents 372,703 establishments out of 512,254 reporting, or 72.8 per cent of the whole. This is the system in which

[1] From Twelfth Census, Report on Manufactures, I, lxvi-lxviii. For table see next page.

Manufacturing Establishments and Products Classified by Character of Organization

Groups of Industries	Character of Organization									
	Total		Individual		Firm and Limited Partnership		Incorporated Company		Coöperative and Miscellaneous	
	Number of Establishments	Value of Products	Number of Establishments	Value of Products	Number of Establishments	Value of Products	Number of Establishments	Value of Products	Number of Establishments	Value of Products
All Industries	512,254	$13,004,400,143	372,703	$2,674,497,008	96,715	$2,565,360,839	40,743	$7,733,582,531	2,093	$30,959,765
Food and Kindred Products	61,302	2,277,702,010	42,573	444,246,312	11,906	394,392,019	5,025	1,414,098,944	1,798	24,964,735
Textiles	30,048	1,637,484,484	18,701	262,342,066	8,084	547,349,114	3,245	827,705,447	18	87,857
Iron and Steel and their Products	13,896	1,793,490,908	5,717	107,343,147	3,329	177,415,968	4,843	1,508,493,141	7	238,652
Lumber and its Remanufactures	47,079	1,030,906,579	28,470	265,836,256	13,906	256,128,769	4,675	508,383,813	28	557,741
Leather and its Finished Products	16,989	583,731,046	12,906	. . . . .	2,990	208,571,042	1,091	257,808,524	2	. . . .
Paper and Printing	26,747	606,317,768	16,392	127,110,593	5,682	106,830,193	4,490	368,923,042	183	3,453,940
Liquors and Beverages	7,861	425,504,167	5,063	69,353,112	1,463	. . . . .	1,333	305,129,467	2	. . . .
Chemicals and Allied Products	5,444	552,891,877	2,085	. . . . .	1,152	60,181,725	2,206	450,102,084	1	. . . .
Clay, Glass, and Stone Products	14,809	293,564,235	8,761	69,147,764	3,891	66,327,320	2,132	157,336,458	25	752,693
Metals and Metal Products other than Iron and Steel	16,305	748,795,464	10,666	. . . . .	4,167	88,143,271	1,470	578,172,577	2	. . . .
Tobacco	15,252	283,076,546	12,803	79,919,991	2,085	74,456,334	358	128,478,983	6	221,238
Vehicles for Land Transportation	10,113	508,649,129	5,750	43,223,011	2,079	. . . . .	2,283	430,855,922	1	. . . .
Shipbuilding	1,116	74,578,158	748	12,592,136	217	6,414,398	151	55,571,624	. . .	. . . .
Miscellaneous Industries	29,479	1,004,092,294	18,545	173,848,128	6,174	188,153,370	4,750	641,875,764	10	215,032
Hand Trades	215,814	1,183,615,478	183,523	777,274,319	29,590	305,612,005	2,691	100,646,741	10	82,413

the single proprietor establishes and conducts a manufacturing or mechanical business on his individual responsibility, contributing the required capital, owning or renting the land and buildings utilized, and employing wage earners or doing all the work himself. It is the most natural and the most primitive form of business organization; but notwithstanding the large proportion of establishments in which it appears still to predominate, its relative unimportance is shown by the fact that this great number of establishments produced only $2,674,497,008, or 20.6 per cent of the total value of products returned, being an average of $7176 to each establishment. Of the 372,703 establishments embraced in this group, 183,523, or nearly half, were establishments engaged in the hand trades.

2. *Partnership.* The second form of organization represented in the table is the firm or partnership, in which two or more persons divide the work of business management and jointly assume the risks. The members of the firm, or the partners, divide profits or losses in certain proportions agreed upon, or in accordance with relative investments of capital, and are jointly and severally liable for all the debts of the firm or partnership to the full extent of their resources. Under this form of organization there were 96,715 establishments reported, or 18.9 per cent of the total. Their products were valued at $2,565,360,839, or 19.7 per cent of the total. Although there were no statistics collected in 1890 with which to compare the totals above shown, it is clear that the relative importance of this form of organization in the conduct of manufacturing enterprises is rapidly diminishing.

3. *The corporation.* The third form of organization represented in the table is the modern business corporation. This is a joint-stock company, with capital divided into shares, which are transferable at the option of individual shareholders. These corporations either obtain a charter by special act of a state legislature or become incorporated under general corporation acts. Many of the earlier joint-stock companies, however, were not incorporated, and were therefore merely a form of partnership.

The important and predominating position of the corporation in American manufactures at the present time is revealed by

the statistics. While only 40,743 of the 512,254 establishments reporting were organized into corporations, they nevertheless produced $7,733,582,531, or 59.5 per cent of the total gross value of products. The facilities offered by the laws of several states for the establishment of business corporations, and the advantages of conducting business under this method of organization, are largely responsible for the rapid development of our manufacturing industries. The corporate form of organization permits the gathering together of capital beyond the resources of the private individual, distributes it among many holders where this is desired, and limits the liability of each holder to the amount of money actually invested in the stock of the company. Thus these organizations comprise nearly all the great manufacturing enterprises of the country.

An examination of the accompanying tables will furnish statistical proof of this statement. The four great industries producing articles of food, textiles, iron and steel, and lumber are largely controlled by corporate capital, and the same may be said concerning the lesser manufacturing industries. The hand trades are, however, still chiefly carried on by the single proprietor. Although these latter, in their nature, are outside the necessity of large capitalization, it was found that out of a total of 215,814 hand-trade establishments, 2691, with an average annual production of $37,401, were operated under some corporate form, as a matter of convenience or business prudence.

The wholesale slaughtering and meat-packing industry is now carried on almost wholly by large incorporated establishments. This has been due to the trade necessity of centralizing slaughtering at a few points convenient both to a large supply and to transportation facilities for quick delivery to the principal distributing markets in the United States and in foreign countries, and to the advantage of locating and supporting agencies in these markets.

About 89.9 per cent of the value of cotton-mill products is made by incorporated establishments. These constitute 72.8 per cent of the total number engaged in the industry. Very few cotton mills are now carried on without a charter of incorporation.

The same form of organization appears in the manufacture of worsted goods, and to a less extent in the manufacture of woolen goods. The manufacture of worsted goods is carried on with a more expensive equipment than is necessary in the case of woolen goods. The latter industry is more suitable for the employment of small capital under individual attention. In the silk-manufacturing industry 27.3 per cent of the establishments was owned by individuals, 31.9 per cent by firms or partnerships, and 40.8 per cent by incorporated companies. Very much the same conditions exist in the hosiery and knit-goods business, 38.3 per cent of the mills being owned by individuals in 1900, and 27.4 per cent by firms or partnerships.

In the iron and steel industry in 1900 the value of the products of all kinds amounted to $1,793,490,908, of which $1,508,493,141, or 84.1 per cent, was the value of the products of incorporated companies, made by 4843 establishments, or 34.9 per cent of the total number. Of the 13,896 establishments in the industry, 668, classified as "iron and steel," produced 44.8 per cent of the total products; 586 of these, or 87.7 per cent, were incorporated, and produced 93.6 per cent of the total for that branch of the industry. This latter fact shows that the manufacture of iron and steel has reached proportions beyond the control of individual and partnership ownership.

In the lumber industry in 1900 over one half of the value of products was made in individual and partnership establishments. This applies quite generally to the industry in all its branches, for it has not yet attained a development which makes incorporation a matter of paramount importance.

The leather industry, including the manufacture of boots and shoes, has also remained largely under private ownership. Of the 16,989 establishments existing in 1900, 12,906 were owned by individuals. The nature of the industry still permits of this, although it is rapidly changing, the industry assuming larger proportions which require the employment of accumulated capital under a single and delegated management. The saddlery and harness branch of this industry is distributed among many individual establishments, which furnish over half of the

value of its production. Of the 16,989 establishments in the leather industry as a whole, 12,934 were engaged in the manufacture of saddlery and harness.

The manufacture of paper and wood pulp was chiefly carried on in 1900 by 484 corporations, which furnished products valued at $105,378,995, out of a total produced by 763 establishments and valued at $127,326,162. Of the 15,305 establishments engaged in the printing and publishing of newspapers and periodicals in 1900, 9759 were owned by individuals, 2994 by partnerships, and 2378 by corporations. These latter furnished 58.1 per cent of the total value of products.

In the liquor and beverage industry 71.7 per cent of the value of products reported in 1900 was reported by corporations. This applied very generally to all branches of the industry except bottling and the mineral and soda-water manufacture. In these individual ownership was the most important form of organization. The manufacture of malt and distilled liquors was under the control of corporations to the extent of 79.9 per cent of its value of products.

The chemical industry, in its various branches, was largely capitalized in 1900 under some form of corporation, 81.4 per cent of the total value of its products being reported by corporations. This form of organization was common in the refining of petroleum and in the manufacture of cotton-seed-oil fertilizers, explosives, paints, and chemicals proper. The manufacture of perfumery, cosmetics, and patent medicines was still very largely carried on by individuals and firms. These branches included 42.1 per cent of the total number of establishments engaged in the chemical industry.

The clay, glass, and stone industries are largely under individual and firm ownership. This is particularly true of the brick and tile manufacture, and such trades as china decorating, glass cutting, staining, and ornamenting, marble and stone work, and the making of monuments and tombstones. Nearly all the glass made in 1900 was produced by corporations, and, to a less extent, the same is true of the manufacture of pottery, terra cotta, and fire-clay products, as well as lime and cement products.

In the manufacture of metal products, other than iron and steel, corporate production predominated. This is plainly seen in the smelting and refining industries. Thirty-three of the thirty-nine establishments engaged in smelting and refining lead were corporations. These reported 99.7 per cent of the total value of products. Twenty-six corporations of the thirty-one establishments engaged in the smelting and refining of zinc reported 92.0 per cent of the total value of products. Forty-three corporations of the forty-seven establishments engaged in the smelting and refining of copper reported 96.9 per cent of the total value of products. The smaller manufactures and trades, as jewelry making, electroplating, tinsmithing, and the reducing and refining of gold and silver, not from the ore, were very largely in the hands of individuals and firms.

The tobacco industry in 1900 was conducted chiefly by individuals and partnerships, and particularly was this the case with the manufacture of cigars and cigarettes, where the value of the product for these classes of establishments was 77.1 per cent of the total. The manufacture of chewing and smoking tobacco and snuff was very largely carried on by corporations, their establishments producing 85.9 per cent of the value of the products of this branch of the industry.

The manufacture of vehicles for land transportation was carried on chiefly by corporations in all its branches except carriages and wagons, the chief of these branches being the manufacture of steam and street-railroad cars.

Iron and steel shipbuilding was carried on almost wholly by corporations, while 63.4 per cent of wooden ship and boat building was done by individuals and firms, 43.7 per cent being done by individuals and 19.7 by firms.

The production of the following miscellaneous industries was chiefly that of corporations: agricultural implements, ammunition, coke, electrical apparatus and supplies, enameling and enameled goods, fireworks, gas, illuminating and heating, manufactured ice, lead pencils, phonographs and graphophones, photographic materials, rubber and elastic goods, soda-water apparatus, washing machines and clothes wringers, and windmills.

4. *Miscellaneous ownership.* The table shows only 2093 establishments reporting their form of organization as different from the three forms above considered. These establishments produced $30,959,765, or only 0.2 per cent of the gross value of products.

The small number indicates the infinitesimal part which coöperation, either on the English (Rochdale) system or any other system, plays in the manufacturing industries of the United States. There are some striking instances of success in this form of organization in certain industries, the most notable being in the manufacture of butter, cheese, and condensed milk, which single industry reported 1765 out of the 2093 establishments of this class, and a product of $24,337,561, or 78.6 per cent of the total. Eight coöperative associations were shown in cotton ginning and nineteen in the canning and preserving of fruits and vegetables. These establishments are generally organizations of farmers who combine for the purpose of handling the produce of their farms. There were seven coöperative associations in the glass industry, with products valued at $545,319. The special report on the glass industry in the Report on Manufactures, Part III, contains the following statement in regard to this form of organization :

> The five companies of a "miscellaneous" character were all coöperative and engaged in the manufacture of window glass, most of them having been established within the census year, and were financially supported by the glass workers' union, which loaned money proportioned on the pot capacity of each plant. There were two establishments of this character reported in the pressed and blown ware and bottle and jar branch of the industry. It should be stated, in this connection, that there were in the glass industry, in addition, nine incorporated establishments of a coöperative character operating under charters, which in all the tables are included under the head of corporations. They are in all essential particulars coöperative associations. This movement toward coöperation arose from the desire to secure more work during the year, the capacity of the factories having been for some time so much in excess of current consumption that the "run" of the factories had been getting less each year, averaging about six months where it was formerly ten. The past record of coöperation in the window-glass industry of the United States has been unsatisfactory, all going well as long as the market conditions were good, but

financial ruin usually appearing with any depression in the trade. The indications at present are very favorable for coöperative manufacture, and it will probably spread very rapidly in the industry in the near future. The greatest impetus it receives comes from the scarcity of workmen, which is leading manufacturers to organize companies in which a large share of the stock is held by the workmen, who are thus less likely to be tempted away by offers from other manufacturers. Along with these quasi-coöperative companies many real coöperative companies, composed entirely of the men in the factory, are being established, especially among the Belgian workmen, who form a considerable proportion of the entire working force.

It should be explained that all returns from manufacturing establishments of a coöperative character, which were incorporated under state laws, were treated as corporations and so tabulated.

Other establishments included among the miscellaneous forms of organization are several "communities," so called, — a number of societies, churches, and colleges, which for the most part were engaged in the publication of periodicals devoted to their own interests. Under these miscellaneous forms of organization there were one hundred and seventy-four establishments, showing a product of $3,102,785, engaged in printing and publishing newspapers.

CHAPTER VII

STUDIES OF THE IRON AND COTTON INDUSTRIES

1. The Iron Industry in the United States [1]

Thirty years ago Great Britain was still the world's commanding producer of iron and steel. Notwithstanding half a century or more of almost continuous protection, the United States held but a distant second place. The output of pig iron in the old country in 1870 was very nearly six millions of tons; that in the new country was but little over a million and a half. But between 1860 and 1870 the product in the United States had doubled, — a geometrical progression, which, if maintained, must soon cause all rivals to be distanced. It is much easier, however, to double a small number or a small output than a large one: the rate of growth in the beginnings of a movement is rarely maintained for long during its later course. Yet in this case the unexpected happened: for three decades the geometrical progression was maintained in the output of pig iron in the United States. The product of 1870 had been double that of 1860, 1880 doubled 1870, and 1890 again doubled 1880. The iron industry of Great Britain held its own, and, indeed, between 1870 and 1880 made a notable advance; but it could not match the astounding pace of its young rival. In 1890 the United States turned out more than nine million tons of pig iron, for the first time passing Great Britain and displacing that country suddenly as the leading producer. The depression which followed the crisis of 1893 caused a sharp decline in the American product, the lowest point being reached in 1894. But with the revival of activity after 1896 the figures again mounted, reaching near twelve millions in 1898 and fourteen

[1] By F. W. Taussig. Reprinted from the *Quarterly Journal of Economics*, February, 1900.

millions in 1899. The year 1900 will hardly show a repetition of the feats of the previous decades. The pace of the geometrical progression is too killing to be maintained; yet all present indications are that the close of the decade will show an output beyond the dreams even of five years ago.[1]

This enormous increase, however, has been by no means evenly distributed over the United States. Within the country a revolution has taken place, which is part and parcel of the changed relation to other countries, and which must be followed before the latter can be understood.

The first great impulse to the production of crude iron on a large scale came in the United States with the successful use of anthracite coal as fuel. During the twenty years preceding the Civil War (1840–1860) the site of the industry and its growth

[1] The figures as to the production of iron in the two countries are easily found in the excellent statistical reports prepared for the trade in the two countries, — the *Statistical Reports of the British Iron Trade Association*, of which Mr. J. S. Jeans has long been secretary, and the *Statistical Reports of the Iron and Steel Association*, of which Mr. J. M. Swank has been the equally efficient secretary. For quinquennial periods the output of pig iron in Great Britain and the United States has been as given below. The figures for Germany (including Luxemburg) are given also; the growth there, too, has been extraordinarily rapid.

	Great Britain	United States	Germany
1870	5963	1,665	1391
1875	6365	2,024	2029
1880	7749	3,835	2729
1885	7415	4,044	3687
1890	7904	9,203	4658
1895	7703	9,446	5464
1896	8563	8,623	6375
1897	8817	9,653	6864
1898	8681	11,774	7216
1899	. . .	14,000 (est.)	. . .

For the United States and Great Britain the figures denote thousands of gross tons of 2240 pounds; for Germany, metric tons of 2204 pounds.

[Since 1899 the output of the United States has been as follows:

1900 = 13,789 1902 = 17,821 1904 = 16,497 1906 = 25,307
1901 = 15,878 1903 = 18,009 1905 = 22,992

— Ed.]

were governed by this fuel; hence eastern Pennsylvania was the main producing district. The supplies of ore near this region were smelted with its anthracite coal, and Philadelphia was the central market. Proximity to the seaboard made foreign competition easy, except so far as it was hampered by the tariff duties; and the very existence of the iron industry was felt to depend on the maintenance of protection. For some time after the close of the Civil War this dominant position of anthracite iron was maintained. In 1872, when the systematic collection of detailed statistics began, out of a total production of two million five hundred thousand tons, one half was smelted with anthracite coal, a third with bituminous coal or coke, the remainder with wood (charcoal). The use of soft coal, which had begun before 1860, became rapidly greater. Already in 1872 it was important, and from year to year it grew. In the periodic oscillations between activity and depression, which mark the iron trade more distinctively than any other industry, anthracite iron shrank sensitively in the slack periods, and barely regained its own in the succeeding periods of expansion. Bituminous or coke iron, on the other hand, held its own during the hard times, and advanced by leaps and bounds with each revival of activity. In 1875, for the first time, its output exceeded that of the rival eastern fuel, and since that date the huge advance in the iron product of the United States has been dependent on the use of coke. Indeed, the use of anthracite alone began to shrink at a comparatively early date. It soon ceased to be used on any large scale as the sole fuel, coke being mixed with it for use in the blast furnace. The production of iron with anthracite coal only has shrunk to insignificant dimensions. What is classed as "anthracite iron" is smelted with a mixture of coke and hard coal; and, even with the aid of the coke, this means of reducing the ore has come to be of less and less importance. Virtually, anthracite coal has been displaced as an iron-making fuel.[1]

This change is easy of explanation. It is the inevitable result of the greater plenty and effectiveness of coke; and it has been

[1] The production of pig iron by fuel at quinquennial intervals is given in the table on page 196. By way of illustrating the trend over a long period, the year

powerfully promoted by the rapid development of the United States west of the Appalachian chain, and the nearness of the coke region to this growing market. Anthracite, at best, is an obdurate fuel. At the same time its strictly limited supply and the cleanliness and freedom from smoke, which make it an ideal domestic fuel, have maintained its price at a comparatively even level. On the other hand, the almost unlimited supplies of bituminous coal and the feverish competition in opening coal lands and marketing their product have caused an almost uninterrupted fall in its price. Coke has proved, ton for ton, a better fuel than anthracite; the supplies of bituminous coal available for coking are virtually limitless, and the processes of coking have been applied on a huge scale and with tireless energy.

Pittsburg, long ago seen to be destined to become a great iron center, is situated in the heart of the region where coking coal is plentiful. To this point the iron industry has converged, attracted first by cheap fuel and soon by other geographical

1855 has been taken as the starting point. The figures, as in the previous table, indicate thousands of gross tons.

	Pig Iron smelted with			
	Anthracite		Bituminous	Charcoal
1855	341		56	303
1860	464		109	248
1865	428		169	234
1870	830		508	326
1875	811		846	367
1880	1614		1741	480
	Anthracite alone	Anthracite and Coke		
1885	250	1059	2,389	357
1890	249	1937	6,388	628
1895	56	1214	7,950	225
1896	111	1034	7,166	310
1897	21	912	8,465	255
1898	22	1181	10,274	297

[In 1906 the pig iron smelted with anthracite or anthracite and coke amounted to 1,560,686 tons; that smelted with charcoal amounted to 433,000 tons; and that smelted with bituminous coal or coke amounted to 23,313,498 tons. — Ed.]

advantages of the region, — its easy access to the growing western country, and the added opportunities of securing superabundant quantities of the best ore. Pennsylvania has remained the greatest iron-producing state in the Union ; but since 1880 it has been western Pennsylvania, and no longer eastern, which has secured to the state its leading position. Since 1890 this district alone has yielded steadily 40 per cent of the enormous iron product in the country; and it is here, and in the other western districts in which the same industrial forces have been at work, that we have to study the conditions on which the growth of the iron industry has depended.

The westward movement has been spoken of in the preceding paragraph as affected by the geographical distribution of the fuel. But it has been no less affected by the distribution of the ore supply, and the effect of this in turn has rested on the revolution wrought in the iron trade by the Bessemer process.

The first inventions which made plentiful the iron indispensable for all our material civilization were Cort's processes for puddling and rolling. Through the first three quarters of the century this was the mode in which the world got its supply of the metal in tough form, usable where heavy strain must come on it. The processes involved at once a considerable plant, complex machinery, and strenuous exertion by skilled and powerful laborers, — conditions which during this period promoted the supremacy of the British iron trade. In the decade 1860–1870 the process devised by Sir Henry Bessemer, to which his name attaches, began a second revolution in the iron trade. That process involves a still larger plant and still more elaborate machinery; and it applies machinery more fully to the elimination and subsequent replacing of the carbon on which the toughness of the iron depends. By the new methods the production of mild steel — that is, tough iron — became possible on a vastly greater scale. Bessemer steel has displaced puddled iron in most of its uses. Not only this: the cheap and abundant supply, besides filling needs previously existing, has opened vistas for new plant, machinery, durable instruments of

production of all sorts. The first great application of the method was to rails, where the elastic and impact-sustaining steel enabled railway engines and cars to be doubled and quadrupled in size, and to become more efficient in even greater ratio. Gradually and steadily new and wider uses were found for the cheap steel. From great ships down to everyday nails, almost every iron instrument became cheaper and better. Wood was supplanted by steel for a variety of uses, and the slow-growing and easily exhausted stores of timber were reënforced by the well-nigh limitless deposits of ore in the earth's crust. A new domain in nature's forces was opened to man.

But the Bessemer process depends for its availability on special kinds of ore and pig iron, — such as are well-nigh free from sulphur and especially from phosphorus. Variants of the process, free from this limitation, have indeed been applied on a great scale, especially in Germany, where supplies of non-phosphoric ore are not readily available. But the original Bessemer process remains the most effective and the most economical. Ores adapted to it have hence become doubly valuable, and the accessible parts of the earth have been scoured to find them. The deposits of Great Britain in Cumberland and Lancashire contained important supplies, yet not in quantity adequate to the new demand; and the Spanish fields of Bilboa, on the Bay of Biscay, have become an indispensable supplement for the British ironmasters. In the United States, also, some of the sources previously used in the region east of the Appalachian chain proved to be available, — such as the famed deposits, once unique in their ease of working, in the Cornwall hills of eastern Pennsylvania. But the greater part of the eastern ores were too highly charged with phosphorus, or for other reasons unavailable. Here, as in Great Britain, a distant source of supply was turned to. The Lake Superior iron region, long known to explorers and geologists, suddenly sprang into commanding place. Here were abundant and super-abundant supplies of rich and properly constituted ore. These and the equally abundant coal of Pennsylvania were brought together, the iron made from them was converted into steel by the Bessemer process; and

thus only became possible the astounding growth in the production of iron and steel in the United States.

The iron mines of the Lake Superior region stretch in widely separated fields along the lake, from the middle of its southern shore to its extreme northwestern end. Intercalated between them is the great copper-bearing peninsula, whose rich yield of that metal has affected the copper trade in the same manner and almost in the same degree as the iron mines have the iron trade. At the extreme eastern end is the Menominee iron field, usually described in connection with the other Lake Superior fields, yet differing from them in important respects. The ore of the Menominee district is easily mined; and it is easily shipped, finding an outlet by the port of Escanaba on Lake Michigan, and thus traversing a much shorter journey to its eastern markets than that from the Lake Superior mines proper. But it is usually of non-Bessemer quality, and hence can play no considerable part in the most characteristic effects of the new developments. The great Bessemer ore fields of Lake Superior are four in number, — in geographical order from east to west, — the Marquette, the Gogebic, and the neighboring Vermilion and Mesabi. As it happens, the geographical order has been also, in the main, the order of exploitation. The easternmost, the Marquette, finding its outlet by the port of that name, was the first to be worked on a great scale. Even before the Civil War mining and smelting had begun; and, as the Bessemer process was more and more largely used, especially after 1873, it was exploited on a larger and larger scale. Here began the digging on a great scale, and the transportation to great distance, of Bessemer ore. After a considerable interval the second field, the Gogebic, began to be worked, in 1884. Lying some two hundred miles further west, along the boundary line between Wisconsin and Michigan, and finding its outlet by Ashland, on the southern shore of Lake Superior, here was found perhaps the richest and purest Bessemer ore. At about the same time, in 1884, began the development of the most distant of the fields, the Vermilion, lying to the north of the extreme end of Lake Superior, in the state of Minnesota, close to the Canada frontier.

Here, too, were great stores of rich Bessemer ore, shipped by the port of Two Harbors on the northern shore of the lake.

In all these fields the ore has been secured by what we commonly think of as "mining," — by digging into the bowels of the earth and bringing the material up from a greater or less depth. But in very recent years the latest and now the most important of the fields has given opportunity for the simplest and cheapest form of mining; great bodies of ore are lying close under the ground, and, when once the surface glacial drift has been removed, obtainable by simple digging and shoveling, as from a clay pit.[1] Along the Mesabi[2] range of hills, lying about one hundred miles northwest of the end of Lake Superior, distant not many miles from the Vermilion range, vast tracts of rich iron ore, finely comminuted and easily worked, lie close to the surface. Here a new source of supply was added, offering unique opportunities for exploitation on a great scale. These opportunities were availed of with astounding quickness. The Mesabi field at once sprang into the front rank among the Lake Superior fields, and, indeed, among all the iron-ore fields of the world. Ten years ago the region was a trackless waste. In 1892 it was opened by railway. Towns sprang up, huge steam shovels attacked the precious ore, and long trains carried it to the newly constructed docks at the port of Duluth. Even during the depression that followed the crisis of 1893 the output from this field mounted year by year. In 1893, virtually the first year of operation, six hundred thousand tons were shipped from it; in 1894, thrice that amount; and in 1895 it became, what it has since remained, the most productive of the iron-mining districts. A little less than half of the ore is of Bessemer grade. Its physical constitution, moreover, is such that, for advantageous use in the furnace, other ore needs to be mixed with it. Were it all of the prized Bessemer quality, and in the best form, the other fields might be entirely displaced. With

[1] It should be noted that in the Marquette region, also, the iron ore was secured at the first working and for many years thereafter by open cuts. But the extraction of ore on a great scale has proceeded by underground operations.

[2] Variously spelled: Mesabi, Mesaba, Messabi, Messaba.

the limitations in the quality of the new ore, the other fields still find themselves able to hold their own in the market, though their supremacy is ended by the favored rival.

For many years the Lake Superior mines have been the main sources of supply for the iron ore of the American iron industry. More than half of the total supply had here been secured; and the Bessemer supply, which has been by far the most effective and significant part of the total, has come mainly from this region.[1]

In this brief description of the Lake Superior iron region, reference has been made to the ports by which the ore is shipped, — Escanaba, Marquette, Ashland, Duluth, Two Harbors. To each of these the ore must be carried by rail from the mines, — sometimes a few miles, sometimes, as with a large part of the Minnesota supplies, a hundred and more. And, with this first movement, only the beginning is made in its long journey.

[1] The United States Geological Survey, in its successive admirable *Reports on the Mineral Resources of the United States*, has followed the history of the iron fields of Lake Superior, as, indeed, of all the mineral resources of the country. In the issue for 1895–1896 (forming Vol. III of the *Seventeenth Annual Report* of the Survey) a summary description is given, with convenient sketch maps showing the location of the several fields. In *Cassier's Magazine* for October, 1899, Messrs. J. and A. P. Head, two English engineers, published an excellent brief account of the Lake Superior mines, and of the modes of working them.

The relative importance of the fields, the order in which they have been developed, and their relation to the iron-ore production of the whole country are shown by the following figures:

Iron-Ore Production (in Thousands of Gross Tons)

	1880	1885	1890	1895	1898
Menominee	592	690	2,282	1,924	2,527
Marquette	1384	1430	2,993	2,098	3,125
Gogebic	. . .	119	2,847	2,548	2,498
Vermilion	. . .	225	880	1,079	1,265
Mesabi	. . .	. . .	. . .	2,781	4,614
Total Lake Superior	1987	2466	7,071	10,429	14,030
Total United States	7120	7600	16,036	15,957	19,434

For 1899 the Lake Superior product was about 18,500,000 tons.

[In 1902 the output of the Lake Superior mines was 26,273,000 tons, and that of the United States was 35,567,000 tons. — Ed.]

From the shipping port it is carried eastward by water to meet the coal, — the coal being coked at the mines, and in that form made best available for smelting purposes. Some of the ore goes down Lake Michigan to Chicago, where it meets the coal from Pennsylvania about halfway. Some of it goes farther, through Lakes Huron and Erie, and meets the coal at Toledo, Ashtabula, Cleveland, and other ports on Lake Erie. The largest part is unloaded from the vessels at lake ports, and carried by rail to the heart of the Pittsburg coal district, there to be smelted by the coal on its own ground. No small amount goes even beyond, — to the eastward in Pennsylvania, beyond the Pittsburg district, even into New Jersey and New York, almost to the seaboard itself. Hence the cities of Erie and Buffalo have become important ore-receiving ports on Lake Erie, the ore, if not smelted there, going thence by rail on its journey to the smelter. This last and farthest invasion of distant regions by the Lake Superior ore has been promoted by the import duty on the competing foreign ore which seeks to find an entrance by the Atlantic seaboard, — an aspect of the iron trade of which more will be said in the second part of this paper.

The iron-producing region which depends on the Lake Superior ores thus stretches over a wide district, the extreme ends being separated more than a thousand miles. Close by the iron mines are a number of charcoal-using furnaces in Wisconsin and Michigan. The still unexhausted forests of these states supply this fuel in abundance; and charcoal iron, though long supplanted for most uses by the coke-smelted rival, has qualities which enable a limited supply to find a market, even at a relatively high price. Next in order come Chicago (South Chicago) and some neighboring cities, among which Milwaukee in Wisconsin and Joliet in Illinois are the most notable. It is one of the surprises of American industry that iron manufacturing on a huge scale should be undertaken at such points, distant alike from ore and from coal and having no natural advantages whatever. The coke is moved hundreds of miles by rail from Pennsylvania, and meets the ore which has traveled

no less a distance from Lake Superior. Ease of access to the western market gives these sites an advantage, or at least goes to offset the disadvantage of the longer railway haul of the fuel. Other iron-producing points of the same sort are scattered along Lake Erie. At each of the ports of Toledo, Lorain, Ashtabula, Erie, Buffalo, especially Cleveland, ore is smelted and iron and steel making is carried on. But the coal region itself — western Pennsylvania and the adjacent parts of Ohio — remains the heart and center of the iron industry. Hither most of the ore is carried; and here the operations of smelting, converting into steel, fashioning the steel into rails, bridges, plates, wire, nails, structural forms for building, are performed on the greatest scale. For some years the natural gas of this region added to its advantages and aided in its exceptionally rapid growth. But each supply of gas exhausted itself before long, and new discoveries did not maintain the inflowing volume at its first level. It was the abundant and excellent coal which formed the sure basis of the manufacturing industries, and the permanent foundation more especially of iron and steel making.

Whether the ore goes to the coal or the coal meets the ore halfway, one or both must travel a long journey, by land as well as by water. One or both must be laden and unladen several times. A carriage of eight hundred, nine hundred, over one thousand miles must be achieved, with two separate hauls by rail. Fifty years ago, even twenty years ago, it would have seemed well-nigh impossible to accomplish this on a great scale and with great cheapness. The geographical conditions on which a large iron industry must rest were supposed by Jevons in 1866 to be the contiguity of iron and coal.[1] But here are supplies of the two minerals separated by a thousand miles of land and

[1] Jevons, The Coal Question, second edition, chap. xv. Jevons in that chapter looked for important changes in the United States, chiefly from the wider use of anthracite in iron making. The fact that "the Americans are, of all people in the world, the most forward in driving canals, river navigations, and railways" was noted by him as sure to affect the American iron trade; but even his keen imagination and wide knowledge could not foresee how much and in what directions this "driving" would operate.

water, and combined for iron-making on the largest scale known in the world's history. One of the most sagacious of American students of economics, Albert Gallatin, early predicted that the coal area of western Pennsylvania would become the foundation of a great iron industry, and that only with its development would the American iron manufacture attain a large independent growth.[1] But he could not dream that his prophecy would be fulfilled by the utilization of ores distant fifteen hundred miles from the seaboard, transported from a region which was in his day, and remained for half a century after his day, an unexplored wilderness.

The history of the American iron trade in the last thirty years is thus in no small part a history of transportation. The cheap carriage of the ore and coal has been the indispensable condition of the smelting of the one by the other.[2] And, clearly,

[1] "A happy application of anthracite coal to the manufacture of iron, the discovery of new beds of bituminous coal, the erection of iron works in the vicinity of the most easterly beds now existing, and the improved means of transportation which may bring this at a reasonable rate to the sea border, may hereafter enable the American ironmaster to compete in cheapness with the foreign rolled iron in the Atlantic district. . . . The ultimate reduction of the price of American to that of British rolled iron can only, and ultimately will, be accomplished in that western region which abounds with ore, and in which is found the most extensive formation of bituminous coal that has yet been discovered in any part of the globe, and this also lying so near the surface of the earth as to render the extraction of the mineral less expensive than anywhere else." — Albert Gallatin, "Memorial to the Free Trade Convention" (1832), as reprinted in *State Papers and Speeches on the Tariff*, pp. 179, 180.

[2] "Few people who have not actually run a blast furnace realize what it means to fill the capacious maw of one of these monsters with raw material. A stack of 200 tons daily capacity, running on 50 per cent ore must have delivered to it each day something more than 400 tons of ore, 250 to 300 tons of coke, according to the character of the metal required, and over 100 tons of limestone, — say 900 tons of raw materials. Add the 200 tons of pig iron shipped out, and we have a daily freight movement of 1100 tons, taking no note of the disposition of the slag. This is 55 car loads of 20 tons each [a modern ore car will carry 30 tons. — F. W. T.]. . . . Starting up a furnace of ordinary capacity calls immediately for the labor, from first to last, of nearly a thousand men; for the use of at least a thousand railway cars, and many locomotives; for perhaps several steamers and vessels on the lakes." — A. Brown, "The Outlook in the American Iron Industry," in the *Engineering Magazine*, October, 1899, p. 88.

this factor has not been peculiar to the iron industry. The perfecting of transportation has been almost the most remarkable of the mechanical triumphs of the United States. Great as have been the evils of our railway methods, disheartening as have been some of the results of unfettered competition, the efficiency of the railways has been brought to a point not approached elsewhere, largely in consequence of that very competition whose ill effects have been so often and so justly dwelt on. The good has come with the evil; and here, as in the whole domain of private property and competitive industry, the crucial problem is how to eradicate the ill and yet maintain the good. In the carriage of iron ore and of coal the methods of railway transportation developed under the stress of eager competition have been utilized to the utmost; and the same is true of the transfer from rail to ship and from ship to rail again, of the carriage in the ship itself, and of the handling of accumulated piles of the two materials. The ore is loaded to cars at the mines by mechanical appliances. At the Mesabi mines the very steam shovel that digs the ore from the ground deposits it in the adjacent car. At the lake high ore docks protrude hundreds of yards into the water. On top of them run the trains, the ore dropping by gravity from openings in the car bottoms into the pockets of the docks. Thence it drops again through long ducts into the waiting vessels, ranged below alongside the dock. At every step direct manual labor is avoided, and machines and machine-like devices enable huge quantities of ore to be moved at a cost astonishingly low.[1] The vessels themselves, constructed for the service, carry the maximum of cargo for the minimum of expense; while the machinery for rapid loading and unloading reduces to the shortest the non-earning time of

[1] "Every extra handling means more cost. . . . Formerly it was necessary to trim the cargoes; and this had to be done by hand, and gave employment to a great many men at exceedingly high wages. The work, however, was killing while it lasted. Now trimming is in most cases done away with, because the immense size of the freighters renders them stable in any weather; and if there is any great inequality in the trim of the boat, it is rectified by shifting the water ballast from one compartment to another." — Peter White, "The Mining Industry of Northern Michigan," in *Public. Mich. Pol. Sci. Assoc.*, III, 153.

lying at the docks. At the other end of the water carriage, especially on Lake Erie, similar highly developed mechanical appliances transfer from boat to railway car again, or, at will, to the piles where stocks are accumulated for the winter months of closed navigation. At either end the railway has been raised to the maximum of efficiency for the rapid and economical carriage of bulky freight. What has been done for grain, for cotton, for coal, for all the great staples, has been done here also, and here perhaps more effectively than anywhere else: the plant has been made larger and stronger; the paying weight increased in proportion to the dead weight; the ton-mile expense lessened by heavier rails, larger engines, longer trains, and easier grades; the mechanism for loading, unloading, transshipping, perfected, to the last degree, or to what seems the last degree until yet another stage towards perfection is invented. And evidently here, as elsewhere, the process has been powerfully promoted by unhampered trade over a vast territory, and the consequent certainty that costly apparatus for lengthened transportation will never be shorn of its effectiveness by a restriction in the distant market.

Still another factor has been at work in the iron trade, as it has in other great industries, — the march of production to a greater and greater scale, and the combination of connected industries into great single-managed systems. Nothing is more wonderful in the industrial history of the past generation than the new vista opened as to the possibilities of organization. The splitting up among different individuals and separate establishments of the successive steps in a complicated industry — those of the mining, carrying, smelting, rolling, fashioning of iron — was supposed to be due to the limitations of human brain and energy: the management of them all was beyond the physical and nervous capacity of any one man or of any small group of associates. But the range of single management, the size of the unit, have enlarged prodigiously. The increasing application of machinery has made it possible to reduce operations more and more to routine and system, and to lessen the need of independent judgment for every step. Technological

education has supplied an array of trained, intelligent, and trustworthy assistants — engineers, chemists, mineralogists, electricians — to whom can be delegated a multitude of steps and processes that formerly needed the watchful eye of the master himself. That master must possess new powers and new resources ; and the freedom of the modern industrial community, and especially the free atmosphere of our restless and reckless democracy, have stimulated and drawn forth the masterful minds from every social stratum. Hence in all directions we see combinations which unite in one whole a number of associated industries, and, at their best, secure the highest industrial efficiency ; at their best, — for only then are the gains permanently secured. The retribution for error in management is as great as are the rewards of success ; and judgment has become the most highly prized and highly paid human talent.

The iron trade has shown as markedly as any of the great industries the signs and effects of these new conditions. Not only has the size of individual establishments grown, — this is a phenomenon of long standing, — but the number of industries united in one organization has rapidly enlarged. Iron mines, coal mines, coke ovens, railways, steamers, docks, smelting works, converting works, rolling mills, steel works, machine shops, — these have been combined into one imposing complex. The great iron and steel companies operate iron mines on Lake Superior, coal mines and coke establishments in Pennsylvania, docks and railways, as well as iron and steel works proper. The largest of them, the Carnegie Company, has built a railway of its own, specially equipped for the massive and cheap carriage of ore and fuel, from the shore of Lake Erie to the Pittsburg coal district. At its terminus on Lake Erie (Conneaut) a new harbor and a new city have been created. The economy in production from such widely ramifying organizations is not merely or chiefly in dispensing with the services and saving the gains of so many independent middlemen: it arises mainly from consistent planning of every stage, the nice intercalation of operations, the sweeping introduction from end to end of expensive and rapid-working machinery, continuously supplied under

homogeneous administration with the huge quantities of material which alone make possible effective and economical utilization of the great plant.[1]

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While the Lake Superior ores, utilized under the conditions just described, have been by far the most important source of supply for the iron industry, a large contribution has come from another source also, — from the Southern States.

In the region where the states of Tennessee, Alabama, and Georgia adjoin, the conditions once thought indispensable for a flourishing iron industry exist in perfection. Here are great deposits of ore, easy of working; and close by them great deposits of coking coal, no less easily worked. Before the Civil War these natural advantages were not utilized: the régime of slavery and the lack of means of transportation prevented any resort to them. But with the quickening of the industrial life of the South, when once the Civil War and the trying days of reconstruction were passed, the mineral resources of this region were developed on a rapidly enlarging scale. Alabama, where the best deposits of coal occur, became a great iron-producing state: here again, though for a less distance and on a smaller scale, the ore made its journey to the coal. The rate of growth was most rapid between 1880 and 1890: the pig-iron output of Alabama rose from 69,000 tons in 1880 to 915,000 in 1890. The large supply of labor at low wages has contributed to the easy and profitable utilization of this source of supply. The free negro has turned miner, and has proved not only a docile laborer but also, — paid, as miners are, according to the tonnage brought to the pit's mouth, — on the whole, an efficient one. It may be a question how far the low money-wages paid to him are low simply in proportion to his still moderate efficiency, and how far they constitute a factor of real importance in enabling the product to be put on the market at a low price. The favorable natural conditions, when once unlocked by the régime of

[1] In 1901 most of the large companies then engaged in the iron and steel industry were united in the United States Steel Corporation, — the "Steel Trust," — which now controls a very large proportion of the output. — Ed.

freedom and the means of transportation that came with it, doubtless constitute the main basis for the growth of the Alabama iron industry. There are other aspects of it which deserve the attentive consideration of the student of social questions, — the conduct and the prospects of the negroes suddenly herded together in the mining regions, and the relations of the two races under the new conditions. But these are matters that lie apart from the present inquiry. For good or ill — doubtless, mainly for good — the southern iron has taken its place as an important part of the iron supply, with the same rapidity, though with no such dramatic features, as that smelted in Pennsylvania from the Lake Superior ores.

The southern ore contains phosphorus in too large amounts to make it available for the Bessemer process, and this has given it a place somewhat apart in the iron industry of the country. The iron made from it has not competed with that from the Lake Superior ore, and has been used chiefly for general foundry purposes. Marketed at a very low price, the increasing supplies have made their way to places further and further removed. Pittsburg itself soon used Alabama iron for foundry purposes; the Western States and the Eastern alike were supplied; in New England it displaced Scotch pig, previously imported in considerable quantity; and, finally, it began to be exported to England itself. These exports are probably not of importance in the permanent current of trade: the iron has gone out chiefly in a period of unusually depressed prices, and even at this time only as ballast for cotton ships. Beyond this strictly limited movement we shall probably see the export of iron from the United States, not in its crude form, but in much more advanced stages. But this is a subject for later consideration. It suffices to note here that the possibility of export, even at nominal rates of freight and in times of exceptionally low prices, shows how vastly changed are the conditions from those of thirty years ago.

The outcome of the great changes in the geographical distribution of the iron industry is shown in the tabular statement on the next page.

Production of Pig Iron in the United States [1]

(*In Thousands of Gross Tons*)

	1872	1880	1885	1890	1895	1898
Eastern District (eastern Pennsylvania, New York, New Jersey) .	1217	1610	1312	2342	1390	1,431
Western Pennsylvania alone . . .	387	772	1081	2561	3549	4,435
Central District (western Pennsylvania and also Ohio, Indiana, Illinois)	849	1502	1874	4517	6019	7,787
Southern District (Alabama, Georgia, Tennessee, Virginia, Maryland)	127	238	539	1554	1491	1,785
Other States	356	485	319	790	546	770
Total for the United States . .	2549	3835	4044	9203	9446	11,773

In the Eastern District the output, notwithstanding a great increase in the period for which the year 1890 stands, has barely held its own. The total production in 1895–1898 was not sensibly greater than in 1872. On the other hand, the Central District has increased its production steadily and enormously, whether in western Pennsylvania itself or in the neighboring states of Ohio, Indiana, Illinois. This is the region where Lake Superior ore is smelted with Pittsburg coal: in and about Pittsburg itself, in the immediately adjacent parts of Ohio, and at the various lake cities where the ore meets the coal, — Cleveland, Toledo, Chicago, and the rest. Not less striking is the rate of growth in the Southern District, of which Alabama is the most important state. While the total production here is far outweighed by that in the Central District, it now exceeds that in the East, and bids fair to continue to do so.

[1] In this table the figure for eastern Pennsylvania is for the iron smelted in the state with anthracite, or anthracite and coke mixed, while that for western Pennsylvania is for the bituminous (coke) iron. The separation by fuels, it is true, does not indicate with complete accuracy the geographical distribution. But the iron smelted in Pennsylvania east of the Appalachian chain was formerly smelted almost entirely with anthracite, and is still smelted mainly with a mixture of anthracite and coke; and, at all events, this was the only mode in

Before we close this review of the forces which have been at work in the iron industry, some other aspects of the subject deserve brief attention. Here, as elsewhere, the labor situation and the trade-union movement have had their influence; but the power of the labor unions among the iron workers has been less in the United States than in Great Britain, and this fact has been of no small consequence. It is true that the Amalgamated Association of Iron and Steel Workers has long been a firm and powerful organization, modeled on the British unions and strong in its bargaining with the employers. But some of the large iron and steel establishments have been non-union; and their competition, as well as the example they set of a possible cutting loose from the organized laborers, imposed a strong check on the union's control of the conditions of employment. The largest of the American establishments, the Carnegie Company, thus cut loose from the union as a consequence of the great strike — fairly a pitched battle — at the Homestead works in 1892. The consequence has been that the American iron and steel master has felt more free than his British rival to push on with new processes, to remodel his organization, to readjust his labor force.

No doubt, in the talk of the average business man, there is much exaggeration of the dictates of labor unions, and many an impossible claim to attend to his own affairs in his own way. But, on the other hand, whatever may be one's sympathy with labor organizations, it is not to be denied that a firmly organized trade union tends to present a stolid opposition to change and to improvements. This is but human nature. The first effect of a new machine or a better rearrangement is to displace or discommode some laborers; while the disposition to "make work," however disavowed overtly, is too deep-rooted to permit labor-saving changes to be made without strong though silent

which the statistics at hand made it possible to separate the eastern and western parts of Pennsylvania.

In the Southern District Virginia and Maryland are near the seaboard, and might be constituted a group apart from the other states there included. But the iron industry in them, as in the others, is of recent growth, and depends both for ore and fuel on different sources of supply from those of the northern seaboard region.

opposition. Even where no open resistance is offered, the mere existence of a strong and all-inclusive union, not to be fought without heavy loss, has often a benumbing influence, preventing the very consideration of radical changes and keeping industry in its established grooves. Such has been one of the effects of the strong organization of English iron workmen (the engineers); and the great strike between them and their employers in 1898 was at bottom due to this consequence of their strength. For good or ill the American iron industry has been comparatively free from this benumbing influence: for good, in that the advance of the art of production has been unrestrained; for ill, in that the workman, as is inevitable when standing alone, has bargained on unequal terms with a powerful employer, and has been compelled often to accede to long hours and harsh conditions.

One other of the social aspects in the growth of the iron industry deserves attention, — its connection with the coal trade, and with some of the labor problems that have arisen in that allied industry. The dominant position of the Pittsburg coal district has been repeatedly referred to in the preceding pages. For the iron trade the most important section of that district is the famed Connellsville coke region, lying some fifty miles south of Pittsburg, along the banks of the Youghiogheny river. Here is a level and uniform outcrop of the best coking coal, and from this has come most of the coke used in smelting Lake Superior ores, and, indeed, the greater part of that used in the United States. Important supplies have come also from other near-by regions in Pennsylvania and West Virginia; and Alabama has made from her own coal the coke for smelting her iron. But the Connellsville coke is by far the most important contributor, and alone supplies more than half of the total used in the country.[1]

[1] The output of coke in the United States in 1897 — a year in which Connellsville turned out less than its usual share — was as follows (in thousands of net tons of 2000 pounds):

Connellsville proper	6861	Tennessee	369
Other Pennsylvania	2106	Virginia	354
West Virginia	1473	Colorado	342
Alabama	1443	Elsewhere	
Total United States	13,289		

[In 1905 the output was 24,733,000 tons. — Ed.]

The price of coke has gone down markedly in the last twenty years, in sympathy with the price of bituminous coal generally. Thirty years ago coke at the ovens was sold for $3 a ton. In recent years the price has been on the average not far from $1.50 a ton, and in times of depression less than $1 a ton. Fuel has been turned out for the American ironmaster at prices lower than those paid by his rivals in any part of the world, while low rates of transportation have enabled the cheap fuel to be carried to furnaces near and distant without the loss of this cardinal advantage.

Here, as in the mining and transporting of the ore, and in the practice at the furnace and the mill, cheapness has been secured, but by methods that are, in part at least, vitally different. There has been, indeed, the same bold adventure in opening new sources of supply, the same conduct of industry on a great scale, the same firm organization in direct connection with the iron and steel industries. But the nature of the operations caused cheapness to be attained at the coal mines and coke ovens, not only by machinery and organization but also, to no small extent, by cheap labor. The mining of coal is mainly pick-and-shovel work, requiring little handicraft skill or trained intelligence; and this is still more true of the work at the coke ovens. The coal mines of the United States have drawn to themselves the lowest and poorest kinds of manual labor, except, indeed, where machines for cutting the coal have proved applicable, and skilled and intelligent mechanics have consequently been called on to work them. The miners in England seem to have maintained a better relative position. Their trade organization has been strong, the standard of living and of efficiency comparatively high. In the United States multitudes of newly arrived immigrants have been drawn to the mines, partly through deliberate arrangement by the employers, partly through the silent adjustment of supply to demand. There they have huddled, inert, stolid, half enslaved. The nationalities that have contributed of late years so heavily to our immigration — the Italians, Bohemians, Hungarians, Poles, and what not — have here found employment such as they could at once turn to. In

times of activity their condition is passable, and doubtless better than it had been in their homes beyond the sea. In times of depression and low prices the barest living is all they can secure, and sometimes not that. The American or Americanized laborers of higher standards have met a disheartening competition, and have vainly tried to stem the tide of falling wages and half employment, with the attendant misery, strikes, riots, bloodshed.

Here once more we touch phenomena that lie mainly outside the scope of the present inquiry. The growth of the coal industry is a subject by itself, presenting peculiarities of its own. "Over-production" has been its constant cry; and undeniably there has been a pressure on the market of a large and constantly enlarging supply of coal. The continued opening of new mines, with all the chances of reaping a fortune from the combination of mining and railway ventures, has proceeded with feverish and excessive activity; and, certainly, it is this gilded opportunity which has caused the systematic agglomeration of cheap labor in the bituminous coal districts the country over. It may be, also, that, even under conditions of comparative stability (as in the anthracite regions, where no new fields are available), the nature of the industry, the extreme difficulty of stopping a mine when once in operation, the strong inducement to work it continuously at its maximum capacity, — such causes as these may lead inevitably and recurrently to mounting output and cutthroat competition. Both sets of causes probably have been at work in bringing about the special severity of periods of depression in the coal and coke districts.

At all events, a bitter competition has intensified the evil social conditions which must emerge where great masses of ignorant laborers are congested in out-of-the-way places. Truck shops, low wages, semi-feudal conditions, cheap coal, have meant a cheap man. At the iron mines the conditions seem to have favored the better mode of securing cheapness, — vigorous and intelligent labor, using highly elaborated machinery. Such, too, has been, in greater degree at least than at the coal mines, the direction in which improvement has marched in the railways, on the vessels, at the docks, in the iron and steel works. But at

the very foundation of the industry, at the coal mine and the coke oven, we have a social sore. Perhaps it is but temporary; this great and vigorous organism of ours may absorb the foul matter, even though it be steadily fed from without by new accretions. But foul it is, and remains. When Jevons, a generation ago, surveyed, doubtless with some excess of pessimism, the coal trade of Great Britain, he warned his countrymen that their great structure of material wealth rested on a foundation of brutishness and pauperism. We have been wont to thank God that we are not as other peoples; but the plague is on us also, and we too must face the social responsibilities it involves.

Thus the growth of the iron industry illustrates all the extremes of the industrial revolution which has taken place in the United States since the Civil War. Unfettered enterprise, unrestrained competition, have worked their utmost. The eager search for new resources in the earth's crust has gone on with feverish haste. The march of the arts has led to unceasingly wider utilization of the forces of nature. Production on the great scale has advanced, until the huge enterprises seem almost ready to crush the foundations on which they rest, or topple over of their own weight. Fabulous riches and misery and squalor most abject alike have come with this marvelous transformation; and the twentieth century dawns with new conditions, new problems, new duties.

2. An International Survey of the Cotton Industry[1]

Among the larger industrial changes of the last thirty years few exceed, in importance and interest, the marvelous growth of the manufacture of cotton by machinery. Not only in its original seats, but also in regions where its introduction came much later, the industry has expanded wonderfully. The progress in the several countries has, however, been far from uniform in regard either to its magnitude or to the description and quality of the fabrics produced. Nor are the circumstances under which

[1] By Elijah Helm. Reprinted from the *Quarterly Journal of Economics*, May, 1903.

it has been realized at all alike, nor of similar significance when they are brought to bear upon the problem of the present and future international position. Each case must be separately examined; and we must determine the precise causes of the progress, and whether these have exhausted their force, or are likely to continue, or to be aided or checked by new influences.

But a preliminary question arises. The establishment on a large scale, in recent years, of cotton mills near to the source of the principal raw material, in the American Southern States and in India, and its commencement in China and Egypt, have encouraged the assumption that the industry must tend to gravitate more and more to the cotton field. Thus, in his address delivered on 22d October last, as rector of the University of St. Andrew's, Mr. Carnegie said:

> Capital, management, and skilled labor have become mobile in the extreme. The seat of manufacturing is now, and will continue to be more and more, simply a question where the requisite raw materials are found under suitable conditions. Capital and skilled labor have lost the power they once had to attract raw materials; these now attract labor and capital. The conditions are reversed. The cotton industry, for instance, was attracted from Old to New England, and is now attracted from it to the Southern States alongside the raw material.

There is much, no doubt, in a merely extrinsic view of southern and Indian progress to give a certain strong appearance of probability to the theory laid down by Mr. Carnegie. The facts are before our eyes. Capital and skilled labor *have* been applied on a vast scale to manufacture at the sources of the raw material. But many other things have to be considered before we can conclude that this new phenomenon is to be attributed to the greater mobility, in recent years, of capital and labor. Raw material, too, has become much more mobile. If the cost of transporting raw cotton to the older seats of manufacture were alone to be taken into account, it would appear that there is to-day far more reason for the supremacy of the industry in districts remote from the cotton fields than there was half a century ago. The cost of transport and marketing has been reduced to less than one eighth of what it was then. To this extent, at

least, the raw material has become very much more mobile; but this is not the only consideration, and other factors entering into the problem will receive attention presently.

It is commonly supposed that, in the earlier years of the mechanical spinning and weaving of cotton, Great Britain had for a long time the start before other nations. This belief is not strictly accurate. Machinery was used in both branches almost if not quite as soon in the United States as in England. From priority of establishment, therefore, the English industry gained little. Indeed, during the Napoleonic wars at the end of the eighteenth and in the earlier part of the nineteenth century, when cotton spinning by steam and water power began to be important, the advantage was with the Americans, since they were then, and for a long time afterwards, free from the heavy customs duties on raw cotton and most of the other materials of production, — coal, of course, excepted, — besides the excise duty on printed cotton goods, which oppressed the spinners and manufacturers of the United Kingdom. Moreover, the brief war of 1812–1815 between the states and the old country gave a strong impetus to the American industry. The prices of cotton goods, on the western side of the Atlantic, rose to four times their previous amount; and cotton-spinning mills there were multiplied so excessively that, after the restoration of peace in 1815, many of them were closed, and became for a time almost worthless. In the following year protective duties were imposed, mainly by the influence of the southern representatives in Congress, for the purpose of reviving and encouraging home manufactures, the cotton industry of the North being mostly opposed to them. Before 1813 steam and water power had been applied only to the spinning branch in both countries, but in that year the first mechanical looms were erected in the United States. Comparatively few were then in existence in Europe, and in 1816 there were but two thousand power looms in Lancashire.

In Switzerland, France, Germany, and even in Austria, Italy, and Belgium also, the factory system of spinning was developed almost as early as in Great Britain; but weaving by

power looms was hardly established in the continental countries on an important scale by 1830, except in a few particular districts, such as Alsace, the Vosges, Rouen, Elberfeldt, and two or three Swiss cantons. This tardier development of mechanical weaving on the continent continued long after 1830, and it has had important consequences, as we shall presently see.

Bearing in mind the fact that, regarded as a completely mechanical industry, cotton spinning and weaving had not become thoroughly rooted in Great Britain until towards the close of the first quarter of the last century, one is drawn to the conclusion that at that period it had not gained an appreciable priority in time of its American rival. Its position in 1831–1835, in relation to the cotton industries of the continent and the United States, is approximately indicated by a few figures. In those five years the average annual consumption of cotton was:

	Millions of Pounds	*Per Cent*
United Kingdom	295.2	100
Continent of Europe	142.7	48.3
United States	78.5	26.6

So important had been the progress of the industry in Europe and America between 1820 and 1835 as to prompt the following significant remarks, written in 1836, in the Introduction of Dr. Ure's "Cotton Manufacture of Great Britain":

> The encroachment of foreign competition upon the cotton trade of the United Kingdom has become so rapid of late as to excite alarm for its supremacy, under our heavy taxation, in any mind not besotted by national pride. The continent of Europe and the United States of America, for some time after the peace of 1815, possessed factories upon so small a scale that they could not be regarded as our rivals in the business of the world. But now they work up nearly seven hundred and fifty thousand bales of cotton wool, which is about three fourths of our consumption, and have become formidable competitors to us in many markets exclusively our own.

This was written in 1836. Another instance of alarm at the supposed relative decline of the English cotton industry occurred in that year when the Board of Trade (the official Department

of Commerce) forwarded to the Manchester Chamber of Commerce a number of samples of various descriptions of cotton piece goods, including prints produced in Germany and Switzerland. These were examined by a committee, of which Richard Cobden, then a director of the Chamber, was a leading member. The report shows that he and his colleagues were deeply impressed by the excellence and cheapness of these productions; and there is conclusive evidence, in a memorial to Parliament which he drafted two years later upon British Customs and Excise Policy at that time, that he had begun almost to despair of the English cotton industry as a competitor with the corresponding industries of the continent, unless the oppressive fiscal burdens then laid upon it were removed. But even since the advent of free trade fears of approaching decline have on a few occasions been expressed more or less loudly.

What is the relative position of the industry in the United Kingdom, the continent, and the United States to-day, measured by the quantity of raw cotton consumed in each? In the last cotton season — the year ended on September 30, 1902 — the consumption in these three great divisions was :

	Millions of Pounds	*Per Cent*
United Kingdom	1626.5	100
Continent of Europe	2392.0	147
United States	2018.5	124

Judged, therefore, by the test of the amount of raw material consumed, Great Britain has fallen from the highest to the lowest position within the last seventy years.

We have, unfortunately, no trustworthy statistics of the number of spindles at work in each of these divisions during the period 1831–1835. The number now at work, however, it is possible to state; and the result of a comparison presents a striking contrast with that just arrived at from the statistics of cotton consumption. Here they are :

	Cotton-Spinning Spindles	*Per Cent*
United Kingdom	47,000,000	100
Continent of Europe	33,900,000	72.1
United States	21,559,000	45.8

From this point of view Great Britain again takes the first place, the continent following second, and the United States third as before, though much more closely in both cases.

The apparent paradox that, whilst still possessing very much more spinning machinery than the continent or the United States, Great Britain spins very much less cotton than either of them is easily explained. The yarn produced in English mills is by many degrees finer and of higher value than that spun in the mills of the other two regions. English cotton yarn has long been growing finer and finer. This change has been brought about by two or three causes, but mainly it is a consequence of the increase of machinery in countries to which the coarser British yarns and piece goods were formerly sent. Another cause is that the progress of mankind in wealth and refinement has encouraged the demand for superior, more varied, and more tasteful cotton fabrics, requiring for their production finer yarns. For the spinning of these, and in a great degree for the weaving of the superior fabrics, the climate and the training and skill of the managers and work people, as well as the industrial and commercial organization of the English cotton trade, have proved themselves admirably adapted.

The rapid progress of cotton spinning on the continent during the last fifty years is to be accounted for, in part, by the great industrial and commercial awakening which followed the settlement of the Franco-German conflict. The new spirit was, of course, most powerful and most effective in Germany; but it pervaded the rest of the nations, and one of its fruits was a larger demand for labor, a rise of wages, and a great uplifting of the material condition of the people. To this were added increase of population and vast improvements in the means of transport, aided by the important easing of the customs-tariff restrictions, which, before 1860, had impeded international commercial intercourse between the European countries. It is true that after the Franco-German War a powerful protectionist reaction set in, which became still stronger in 1878, when Prince Bismarck gave it the countenance of his powerful authority. Thirteen years later, however, a more liberal commercial policy supervened,

which, under the impulse of German initiation and guidance, resulted in the series of European treaties of 1891. On the whole, notwithstanding some serious backsliding, the customs arrangements of the European states during the last forty years have not entirely lost the impress of the Anglo-French treaty of 1860, negotiated by Richard Cobden. When contrasted with the highly restrictive and, in some respects, prohibitory system previously existing, the régime which has since prevailed has, reactions notwithstanding, been exceedingly favorable to international commerce in Europe.

All these considerations bear with special force upon the question of the great progress of the continental cotton industry, because its productions are almost entirely consumed within the boundaries of Europe. Of a very few special kinds of cotton goods moderate quantities are sent to other parts of the world, but in relation to the whole they are of trifling account. Regarded in its entirety, the continental cotton industry must be considered a home-trade industry; and its great expansion within the last half-century must be attributed mainly to the enlargement of the home market.

But there is another contributory cause which is of great significance in estimating the present position and the prospects of the continental cotton industry. Before 1870 the process of substituting power-loom weaving for the hand-loom method had made relatively very moderate progress in Europe outside the United Kingdom. In the latter the cotton hand loom had quite disappeared; and in the United States it survived, as a remnant only, in the mountains of Kentucky and Tennessee and in isolated spots in the Southern States. But among the continental nations the handicraft weaving of cotton was widely prevalent, not only as a domestic but also as a semi-factory system. Within the last thirty years it has been steadily giving way to the power loom, yet it is even now very far from being extinguished. In Russia the number of hand looms weaving cotton goods is still enormous; in Austria there are forty thousand of them; and in Germany, France, Italy, Spain, and the Balkan countries many thousands are at work. Now the effect of the substitution of

the mechanical for the hand loom since 1870 on the continent has been the same as that of the like change in Great Britain, which was completed before that year. It reduced greatly the prices of woven goods, and their cheapness, together with the other economic developments already referred to, stimulated the demand for them enormously; and the satisfaction of this enlarged requirement involved the necessity of a much greater supply of yarn; hence the very rapid addition to the number of spindles and the consumption of raw cotton. Before the Franco-German War of 1870–1872 the quantity used by the continental mills had never reached eight hundred million pounds. Since then the progress has been almost continuous, — at all events until the season 1898–1899, when it was suddenly arrested. The successive upward steps and the movement since 1898–1899 are sufficiently indicated by the annexed table:

Continental Consumption of Cotton

Seasons	Pounds	Seasons	Pounds
1872–1873	821,600,000	1898–1899	2,392,000,000
1882–1883	1,374,800,000	1899–1900	2,288,000,000
1892–1893	1,846,000,000	1900–1901	2,288,000,000
1897–1898	2,288,000,000	1901–1902	2,392,000,000

Between 1872–1873 and 1882–1883 the increase was at the rate of 55,320,000 per annum; between 1882–1883 and 1892–1893, at the rate of 47,120,000 per annum; between 1892–1893 and 1897–1898, at the rate of 88,400,000 pounds per annum; and last season the increase was 104,000,000 pounds. Thus the highest level was reached three years ago. In considering these figures it is interesting to note that English textile engineers, who have supplied the bulk of the spinning machinery for the continental mills, have received exceedingly few orders since 1899, and those chiefly from France, for the equipment of new spinning establishments in foreign Europe. It is further to be observed that at the end of last season the stocks of yarn held in nearly every spinning district of the continent were very heavy, — a fact which proves that the enlarged consumption of 1901–1902 was excessive.

Even the foregoing remarkable figures do not tell the whole story of the extraordinary growth in the consumption of cotton fabrics in continental Europe during the last thirty years. So great was the pressure of the demand for yarn to supply the steadily increasing number of power looms that much larger quantities of it were imported from England. For the following figures I am indebted to Mr. Thomas Ellison, of Liverpool:

Exports of British Cotton Yarn to Europe

(*European Turkey excluded*)

Years	Pounds	Years	Pounds
1830	56,000,000	1890	123,700,000
1840	91,900,000	1895	127,400,000
1850	90,700,000	1897	121,100,000
1860	116,000,000	1899	104,000,000
1870	93,700,000	1900	79,500,000
1880	96,100,000	1901	78,500,000

These statistics of the continental takings of cotton and of English yarn are highly instructive in so far as they illustrate the economic progress of the European populations since 1872. They afford, of course, no means of discovering how much of the increase is to be attributed to each of the several stimulating influences previously mentioned. The halt which occurred after 1898–1899 excites inquiry as to its causes. In part, no doubt, it is explained by the German and Russian financial troubles and the consequent depression of trade throughout the greater portion of the continent during the last two years. I am inclined to think, however, that the arrest of the progress three years ago is largely due to the diminished force of the special stimulus springing from the substitution of power for hand looms. If this be a correct opinion, it warrants the expectation that, in the absence of any new impulse, the increase of cotton spinning on the European continent will be very much slower in future than it has been during the last thirty years.

But a further question confronts us. May not the check to the increase in the *weight* of cotton and yarn consumed be due very much to the same cause as that to which the same feature

in the British consumption is to be ascribed, namely, the spinning and weaving of finer counts of yarn? Undoubtedly, more fine yarn is being spun, in Germany and France at least, than in 1880; but in spite of the customs tariffs of these countries, in respect of cotton yarn, being especially designed to encourage the production of the finer numbers, climatic and other difficulties have so far prevented any extension of this branch of the industry at all comparable to that which has been accomplished in the spinning of the lower and medium counts. It is certainly true that the average fineness of the yarn shipped from England to the continent is very much higher than it was twenty-five years ago. Indeed, it is a common expression amongst Manchester merchants engaged in this trade, "The continental demand for low counts is gone."

Within the last two years the erection of new cotton-spinning machinery on the continent has greatly diminished. During 1902 the total number of spindles remained unaltered or was but slightly augmented in every country except France, and even there the increase was only about two hundred thousand. In part, no doubt, and perhaps greatly, the arrest of progress thus indicated must be traced to the German financial crisis of 1900, and the consequent depression of trade there and in surrounding states, as well as to the contemporaneous financial and industrial troubles in Russia. But since the rapid expansion of spinning capacity between the years 1880 and 1900 was undoubtedly due very much to the substitution of power looms for hand looms, it is a reasonable inference that, even after the effects of the financial disturbances have passed away, the rate of progress will diminish.

Assuming that the force of this special and incidental impetus to the continental cotton-spinning industry is now becoming spent, a further question arises. Is it not probable that the production of the spindles and looms of some at least, if not all, of the continental nations will begin to compete seriously in the extra-European markets? All that can be said on this subject at present is that there is no obvious reason why it should do so, apart from some kind of state aid or the pressure

of temporarily overstocked home markets. To one or other of these adventitious forms of assistance the export of an appreciable proportion of the continental cotton goods now finding their way into neutral markets must be ascribed. This fact is of itself highly significant, for it shows that, although there are a few special descriptions which can be exported in open competition and under natural conditions to such markets, the prevailing circumstances are not at all extensively favorable to the creation of an important export of cotton manufactures from the European countries, in competition with England, not to speak of the United States, to which attention must now be directed.

Writing upon the United States cotton industry mainly for American readers, I am conscious of approaching the subject with some diffidence. Yet, having gathered much information about this and other American economic questions by long observation, by strong sympathy with the American people, and by conversation and correspondence with well-informed citizens, I hope I may be found reasonably free from important error.

The chief interest of the progress of the American cotton-mill industry in recent years lies in its amazingly rapid growth in the Southern States. Before the Civil War of 1861–1865 there were very few mills in that section of the country. For well-known social and economic reasons organized manufacture could not flourish in the midst of slavery. Yet in the year 1847–1848 their consumption of cotton was 75,000 bales against 532,000 bales in the North, and in 1860–1861 it was 193,000 bales against 650,000 bales. Now comes a remarkable fact. In the latter year, just before the war broke out, one half of the population of the Southern States — that is to say, about 5,000,000 people — were clothed in hand-woven cotton goods. In 1870, five years after the war, not less than 3,500,000 were thus clothed. These are the estimates of my friend, Mr. Edward Atkinson, of Boston, — than whom, I believe, there is no higher authority, — founded upon extensive correspondence and conversation with many old planters, merchants, and other well-informed persons in the South, and confirmed by his own abundant knowledge. In 1880 there was still a considerable

remnant of this domestic manufacture in the mountains of Kentucky and North Carolina, where it had long been extensively carried on. It was the last survival of a handicraft industry once prevailing throughout the states, and from that region the labor force of the southern cotton mills was drawn for many years after the war. The people, all whites, having acquired the deftness necessary in the handling of threads, supplied a suitable class of operatives for the mills. These, however, did not increase very rapidly until 1879. Since then their progress presents one of the most remarkable incidents in the history of the world's cotton trade during the last twenty years.

This marvelous development may be traced to a concurrence of forces. Until 1875 the spinning mills were largely engaged in producing yarn, partly for the hand looms of the South, then gradually disappearing, and partly for the power looms which were superseding them, and were requiring more and more liberal supplies. According to the census of 1879–1880 there were 12,360 power looms in the southern mills, but in 1900–1901 the number was 122,902, and it is considerably greater now. Within the same interval of twenty-two years the number of spindles in the South increased from 561,360 to 5,819,835. The rate of expansion was thus almost equal in the two departments; but the substitution of machine for hand-loom goods was probably all but completed between 1885 and 1890. This operation brought with it as a consequence, just as it did in Europe, reduced prices of cloth and an enlarged consumption, which was further promoted by the great growth of population, owing partly to natural increase and partly to immigration from the North. But within the last fifteen or twenty years another and a very important new field of distribution for southern cotton goods has been opened out in eastern Asia and elsewhere abroad. Still further, the cloths made in the South, which are of coarse texture, have competed increasingly in recent years with the production of the New England manufacturers, compelling them to devote their attention more and more to the finer and more highly finished descriptions, which are not yet made in the South.

The deliberate opinion of Lancashire manufacturers who, within the last twelve months, have visited the United States for the purpose of investigating the cotton industry is that they have nothing to fear from the competition of the North. In the South, however, one item in the cost of production — that of labor — threatens, they think, rather seriously not only their own (the Lancashire) position, but also that of the manufacturers of the Northern States. The rates of wages in relation to the quantity produced are not more, comparing the same classes of goods, than from one third to one fourth of those prevailing in Lancashire and in New England, which are approximately the same, although often the North American *piece rates* of wages are slightly lower than the English. How is it that in one part of the same country a sufficient supply of labor can be obtained at piece-work rates so greatly below those paid in another part? The answer is highly interesting. Some of the workers have come, as already stated, from the mountain districts of Kentucky and North Carolina, where they formerly made a scanty living by hand-loom weaving, eked out perhaps by the cultivation of the soil on a small scale. Others are drawn from the families of poor farmers who have settled in the South since the war. In both cases the remuneration offered in the mills was so much better than their previous scanty earnings as to induce them to adopt the more remunerative calling. There is good reason to believe, however, that this disparity of labor cost cannot be very long maintained. The scarcity of adult work people has become so urgent that the working force of many mills consists, to an astonishing extent, of little children of eight to ten years old. Immature labor of this kind cannot be very long continued, nor is it likely that rates of wages so greatly below those prevailing in the North can remain unaltered for any considerable time. I am told, moreover, by visitors to the states, who have returned to England within the last month, that the cotton manufacturers of the Northern States entertain no serious apprehensions with regard to the permanence, or at any rate the increase, of southern competition.

But there is apparently another contributory cause of the extraordinary spread of cotton mills in the South. Far more extensively than in the North the employment of the new "automatic" loom prevails there. Calling for less labor, attention, and skill on the part of the operative, the American type is very well suited to the kind of weaving characteristic of the South. These machines, employed upon such work, go far towards justifying their descriptive name; and a single weaver is able to look after three times as many of them as of the ordinary loom. Hence the labor cost of each piece of cloth is enormously reduced.

Upon one important difference between American and English methods of weaving some discussion is just now going on in Lancashire. In this country cotton looms are run at a speed averaging from 15 to 20 per cent higher than in the United States, yielding therefore a larger production, at the expense, however, of greater strain upon the yarn, more frequent breakages of threads, and stoppages of the machine. The question is whether or not it would be better to reduce the speed so as to enable the weaver to take care of more looms. The lessened product per loom would of course involve increased cost of production for fixed charges; but this might be more than compensated by lowering the piece rate of wages without any loss of earnings to the weaver, who would increase his individual output by being able to tend a larger number of looms without additional exertion.

The main interest of the subject of American competition with British cotton manufactures centers in foreign and colonial markets. There can be no doubt that to some of them certain descriptions of American goods are going in increased quantity. We know, moreover, that in one market, that of China, sheetings, drills, and jeans from the United States have, within the last ten years, taken a larger place than British makes of these classes.

One cause of this change has recently been practically removed, — the very much higher freights charged for the carriage of goods to Shanghai from British ports than from New York. Another cause is the excessively low labor cost of production in

the American Southern States. It is the production of these very classes of manufactures, so extensively produced there, which has gone to swell greatly in recent years the exports from America to China. The cure for this particular inequality is simply a matter of time; for it can only come about by the play of economic forces which, though slow, are sure.

Before attempting to summarize salient points in the British position, it is desirable to refer to the machine-cotton industry of the East, — of India, Japan, and China, — where the conditions are widely different from those of the European and American industries. The manufacture of cotton began in Asia, whence it was brought to Europe in its handicraft state. Within the last half century Europe has given it back to Asia as a machine industry. The first Asiatic cotton mill was established in the island of Bombay in 1851. It contained 26,000 spindles, and no looms. In 1871 the number of spindles in all India was about 430,000, and there were 5575 power looms. Twenty years later (in 1891) the number of spindles had reached 3,250,000, and of looms 23,000; and now there are about 5,000,000 spindles and 41,000 looms. In the United Kingdom the number of cotton spindles is approximately 47,000,000, and of looms 750,000; that is to say, one loom for every 62.6 spindles. In India the proportion is one loom to 122 spindles. The difference is significant, because it shows that machine spinning has made much more rapid progress in India than machine weaving. The old spinning wheel has not quite disappeared, but it is very nearly extinguished; and yet there are countless numbers of wooden hand looms still at work in nearly all parts of the country, resisting alike the competition of the coarse productions of the native mills and of the finer goods imported from England. The records of the Indian government may be searched in vain for definite statistics of the handicraft weaving industry, but the census returns of the occupations of the people and the famine reports supply information enough to show that hand-loom weaving is still carried on to a vast extent in every province. In a statement issued by the India Office in 1885 it was estimated that not less than 84 per cent of the 1,011,815 pounds

of raw cotton grown in the Punjab was spun and woven there in the homes of the people. But, undoubtedly, the Indian mills were for many years after their inception engaged mainly in displacing the old indigenous handicraft industry; and the process is still going on, though now very slowly.

But within the last twenty-five years the product of the Indian spinning mills has found a very large outlet in other parts of Asia, especially in China. In the year ended March 31, 1880, the total export of Indian yarn was 25,862,474 pounds, of which 22,567,297 pounds went to China. In 1899–1900 the total amount was 240,693,027 pounds, of which the proportion taken by China was 231,570,757 pounds. Within twenty years the outside demand for Indian cotton yarn was multiplied more than nine and one half times, and the China demand more than eleven times. The political disturbances in the Far Eastern Empire have so greatly interrupted its foreign trade during the last two years that the statistics of this trade since 1890 are not instructive for the present purpose. It is quite clear, however, that the Indian cotton-spinning industry owes its remarkable progress quite as much, to say the least, and probably more, to the great opening for its product in China than to the enlargement of the market in India. The yarn was wanted there, of course, because it was very much cheaper and better than the old hand-spun yarn made from Chinese cotton, which is weak and short in staple, and can be spun by hand only at great cost.

India has never sent to Japan any considerable quantity of yarn. In 1879–1880 the amount was 1,814,090 pounds, and in 1899–1900 only 180,000 pounds. But in Japan a very extensive cotton-spinning industry has arisen, which is also largely engaged in supplying the China market. The number of spindles in the Japanese mills is now about 1,250,000, — one fourth of the capacity of the Indian establishments; and Japanese competition has arisen in spite of the fact that the greater part of the raw material which they use is imported from India itself. To a large extent Japanese yarn is used to supply the native hand looms of Japan, for there are few power looms yet in Japan; but much of it is sent to China, where it is welcomed as a rival

to the Indian product. But in China itself an attempt has been made, within the last eight years, to establish a cotton-spinning mill industry, mainly by Europeans, who argued that if India and Japan could find so large a market for their yarn in China, there must be room for a spinning industry there. The result of this new departure has not been at all encouraging. Chinese cotton is of poor quality; and it is by no means certain that, even if it could be improved, native labor would be found anywhere nearly as efficient as is that of India or Japan. The total capacity of the cotton mills of China is probably not more than seven hundred thousand spindles; and the capital invested in them has, on the whole, proved so unprofitably employed that no extension is now going on, and none is contemplated.

Reverting to the Indian cotton industry, it must be observed that the consequences of its creation have been very important from an international point of view. One of its earliest results was to substitute machine-made yarn and cloth for the handicraft product within the country itself. In this respect it followed precisely the course observable in all countries where cotton mills have taken root. But it would be a great mistake to suppose that the ancient domestic cotton weaving of India, or even the employment of the hand spinning wheel, has disappeared. On the contrary, there is abundant evidence, as already stated, that hand-loom weaving is still carried on very extensively indeed in certain provinces. The next result was the supply, on a very extensive scale, to other parts of Asia, and particularly to China, of cheap and good Indian yarn for the consumption of the native hand looms. The current in this last-named direction has been seriously disturbed within the last two years by political events in China, and the proprietors of the Indian mills have had to pass through very trying times. Their ill fortune has been greatly aggravated by deficient rainfall in India and a serious reduction in the supply of cotton. For these reasons many of the Indian spinning companies have had to face serious losses; and a few of them have been forced into liquidation, prominently some of the Bombay companies, whose production has hitherto gone chiefly to China.

Briefly stated, the conclusions to which I have been brought by a careful study of the machine cotton industry in Asia are: (1) that although wonderfully rapid during the last thirty or forty years, it has not only been extensively engaged in substituting machine for handicraft production, but also in displacing English imports of coarse yarn; (2) that the progress has not gone very far at the expense of the hand-loom weaving branch, which is still able to hold its ground very successfully, notwithstanding the establishment of about forty-three thousand power looms in India and China, whilst Spain, one of the most backward countries in Europe industrially, possesses nearly seventy thousand; (3) that there is no present prospect of either India, Japan, or China being able to compete successfully with the European and American cotton industry in the production of the finer yarns and the higher qualities of piece goods; and (4) that the main hope of India and China in this field lies in the gradual disappearance of handicraft manufacture, in which, however, there are great possibilities of expansion, but always within the limits of the coarser and cheaper qualities. Perhaps some exception to this last statement should be made in the case of Japan, whence some excellent specimens of woven goods have already made their way into the markets of the Far East. In Japan, however, the power loom has as yet made very little progress, most of the piece goods produced there being made in hand looms.

There remains the question how far the extraordinarily rapid development of the machine cotton industry has affected, and is likely to affect, the demand for European and American — particularly English — cotton goods and yarns in Asia. It is quite certain that the imports into India, and also into China and Japan, of the coarser counts of English yarn have greatly fallen off within the last twenty years. The supply of the finer English spinnings to all these countries is, however, fairly well maintained; and the following figures show that the imports into India of all kinds of cotton yarn are still on the whole considerable, and that the decrease within the last ten years, though great, has not been alarming, in view of the persistence of plague and famine since 1899.

Imports into India of Cotton Yarn

Year Ending March 31	Pounds	Year Ending March 31	Pounds
1890	46,382,525	1900	42,621,854
1891	50,970,950	1901	34,803,334
1892	50,404,318	1902	38,299,409
Annual average	49,252,598	Annual average	38,574,856

The imports of piece goods into India have actually increased within the decade, notwithstanding the depression occasioned by the plague and the successive famines. The extent of the increase is shown in the following table:

Imports into India of Cotton Piece Goods

	Yards		Yards
Gray:			
1890	1,257,001,362	1900	1,274,912,153
1891	1,280,539,631	1901	1,192,173,060
1892	1,173,176,482	1902	1,186,764,255
Annual average	1,236,905,825	Annual average	1,217,949,822
Bleached:			
1890	339,098,094	1900	444,546,485
1891	373,148,661	1901	467,482,379
1892	361,394,837	1902	580,088,497
Annual average	357,880,530	Annual average	497,371,120
Colored:			
1890	400,949,291	1900	471,884,268
1891	360,335,370	1901	343,164,775
1892	348,116,680	1902	422,860,841
Annual average	369,800,447	Annual average	412,636,628
All Kinds:	Annual Average		Annual Average
1890–1892	1,964,586,802	1900–1902	2,127,957,570

Increase in 1900–1902, 163,370,768

It is evident that, in spite of the disastrous experience of India during the last three years, and of the efforts of the Indian mills to find outlets in the Dependency itself for the surplus production, enforced by the partial loss of the China market,

English cotton goods have not ceased to make their way in greater quantity to India, where also certain kinds of American goods are used, though not in large quantity.

Occasional reference to the progress and condition of the British cotton industry has already been made, at some length, in the preceding portion of this survey. It remains to state the writer's view of it more fully in a general summary of the international position. The spinning and weaving of cotton in Great Britain by modern machinery began under very adverse circumstances. Prolonged and devastating war, profuse national expenditure and all its consequences, heavy taxation and other exhausting sacrifices, prohibitions and fiscal barriers to international trade in other countries, poverty amongst the English people, and scanty capital in the hands of manufacturers were the attendants of its birth and its years of youth. All these obstacles it survived, although the raw material of the industry was entirely brought from distant lands. In spite of all these seeming obstacles the industry rapidly rose to the foremost position. The later progress of the industry in other countries has practically extinguished most of the branches of business upon which its earlier success was founded. Nevertheless it has continued to increase, and is still increasing. Foreign competition, resulting from natural development or from artificial protection, has impeded, but it has not stopped, its progress; and there is no evidence of its decay or decadence. It has the advantage of a highly favorable climate in Lancashire, a well-trained and industrious body of work people, directed by experienced management, and supported by an admirable commercial organization which embraces every market in the world. Added to these favorable factors, it has a fiscal system which enables it to obtain all the materials and accessories required in the industry at the lowest possible prices, — lower, indeed, on the whole, than its competitors in other countries can command. Its principal raw material has to be brought from sources thousands of miles away, and yet this important disadvantage has been enormously lessened since it was established. Free competition is its accustomed atmosphere; and, in spite of hostile

foreign customs duties upon its productions, it still survives and grows. Whatever future changes may occur, therefore, to help or hinder its course, there is no reason to doubt, still less to despair, of its future, so long as it is allowed to enjoy the benefits of free trade.

The obstacles to the prompt adoption of improvements in machinery and methods, which arise in a few British industries from labor organizations, are not likely to seriously impede their introduction into the British cotton manufacture. For the most part, wages are paid on a piece-work basis; and there is no restriction upon output other than that imposed by the factory acts. There are, of course, always questions of adjustment of the piece-work rates whenever new machines are brought in which increase the amount of production whilst lessening the call upon the labor or attention of the work people. These are settled, usually, on the principle of dividing the pecuniary advantage of the improvement between employer and employee. At the present moment a question of this kind has arisen in connection with "automatic looms," the use of which is only now becoming a practical consideration in Lancashire cotton mills. The weavers' trade unions have fully recognized the necessity of adopting one or more of the various inventions connoted by the term "automatic loom," and they are aware that the economy resulting from their employment must be shared by the proprietors of the mills. The proper apportionment of the advantage will, no doubt, give rise to serious discussion and, it may be, to some conflict; but there is nothing in the disposition of the two sides to justify the least fear that this will impede the introduction of this or any other improvement in the processes of the industry.

CHAPTER VIII

HUMAN WANTS AND THEIR SATISFACTION

1. Human Wants: A General Survey[1]

Life in every form with which we are acquainted is subject to waste and repair. The living structure in no case continues unchanged, but is maintained by a series of reparative acts. If any of these acts be discontinued, life ceases and the organism quickly disappears. In the case of animal life, provision is made by the agency of pleasure and pain for securing the proper supply of reparative material. Every animal is possessed of sensibility; and the acquisition of those materials which are necessary to keep in activity its vital powers is attended with pleasure, while the privation of them involves an equally distinct pain. Food, drink, air, and warmth are the most urgent of these necessities. If these or any of them are withheld beyond a certain small degree or a certain brief time, the animal must die. These necessities man shares with all other animals. He must have a constant supply of pure air; he must have a sufficiency of such food and drink as his organs can assimilate. In colder climates at least, since nature has not furnished him with the protection that the lower animals enjoy, he must have more ample means than they require of retaining the vital heat. If any of these essential conditions be unfulfilled, the human animal, like any other animal, must die. If they be but partially fulfilled, his powers, whether muscular or nervous, are proportionately feeble. If he has complied with all these conditions of his existence, these powers are in a proper state for their due exercise. The satisfaction, therefore, of his primary appetites is imperative upon man. Of all his wants, they are the first in

[1] By W. E. Hearn, Professor in the University of Melbourne. From Plutology: or the Theory of the Efforts to satisfy Human Wants [Melbourne, 1864].

the degree of their intensity; and in the order of time they are the first which he attempts to gratify.

But while the superior organism thus possesses all the desires that belong to the inferior, it has also, by virtue of that superiority, many more. Man has not only the mere animal faculties and their corresponding wants: he has also, beyond all other creatures, other faculties, which, besides their own requirements, seriously affect the gratification of the primary appetites; for man is able not merely to satisfy his primary wants, but to devise means for their better and more complete gratification. The food of the dog or of the horse of our time is, except where it has been modified by man, the same as that of the dog or the horse a thousand years ago. The bee constructs its cell, the spider spins its web, the beaver builds its dam, with neither greater nor less skill than that with which bees and spiders and beavers in all known times have worked. In the quality of their work, in the kind of material they employ, in the modes in which they deal with those materials, there is no improvement and there is no decline. Man alone, of all known animals, exhibits any such improvement. He alone has cooked his food. He alone has infused his drink. He alone has discovered new kinds of food or drink. He alone has improved the construction of his dwelling, and has provided for its ventilation. He alone clothes his body, and varies that clothing according to the changes of temperature or his own ideas of decoration. He alone is not content with the mere satisfaction, in whatever manner, of his physical wants, but exercises a selection as to the mode of their satisfaction. So strong in him is this tendency to the adaptation of his means that, in favorable circumstances, he regards the preparation of the objects which are intended for his gratification as of hardly less importance than the gratification itself. Thus the comparative range of human wants is rapidly increased. When the question of degree is admitted in the satisfaction of the primary appetites, and when the greater or less adaptability of various objects to satisfy these appetites is recognized, the extent of human desires is bounded only by the extent of human skill.

As the attempt to satisfy the primary appetites thus gives rise to new desires, so the actual increase of these desires tends of itself to a still further development. The enjoyment that a man has once received he generally desires to renew. The mere repetition soon becomes a reason for its further repetition. By the powerful influence of habit the desire becomes a taste, and the taste quickly passes into an absolute want. Nor is this all. The mere exercise of the faculties strengthens them, and gives rise to a comparison of results and a desire for further improvement. The man whose senses are educated to a certain point, who has had to a certain extent experience of different modes of satisfying his desires, and has formed a judgment upon the comparative efficiency of these modes, will seldom, in favorable circumstances, stop at that point. Not merely would a return to what pleased his untaught faculties be intolerable to him, but the actual enjoyment which he derives from his discovery stimulates him to further advances, and suggests the modes of obtaining them. Thus while man is not guided and limited by a blind instinct, but each individual is left free to rise or fall according to the exercise of his powers, provision is made, even in the primary wants of our nature, both to prevent the retrogression of the species and to secure its advancement. The number of wants that belong to this class is therefore limited, as I have said, by our knowledge of the properties of matter or of material objects fitted to satisfy our wants, and by our skill in their adaptation. This knowledge and this skill continually increase; and as the limit they present recedes, the range of our tastes and of our artificial wants increases with them.

These principles may be readily verified. It needs no elaborate proof to show that men constantly desire an increase of physical comforts; that when they have acquired such comforts they are pained at their loss, but that their acquisition does not prevent them from continuing to desire a further increase. The universal experience of mankind is conclusive on these points. We feed and clothe and lodge our felon in a way that, to an Australian black fellow, would seem an unspeakable luxury. The mechanic that daily complains of his hard lot would be

shocked if he were reduced to use no better light, or no more convenient measure of time, than that by which Alfred wrote and by which he distributed his labors. Two pounds of tea were presented to Charles II as a present worthy of a king. A century afterwards the steady perseverance of the Americans in abstaining from their unjustly taxed tea was rightly regarded as the most remarkable case of national self-denial that history records. Tobacco was unknown to our ancestors, and even now is unused by not a few; yet its deprivation was, in the eyes of the Irish pauper, the most cruel aggravation of workhouse constraint. "It is a phenomenon," says Bastiat, "well worthy of remark, how quickly, by continuous satisfaction, what was at first only a vague desire quickly becomes a taste, and what was only a taste is transformed into a want, and even a want of the most imperious kind. Look at that rude artisan: accustomed to poor fare, plain clothing, indifferent lodging, he imagines he would be the happiest of men, and would have no further desires, if he could but reach the step of the ladder immediately above him. He is astonished that those who have already reached it should still torment themselves as they do. At length comes the modest fortune he has dreamed of, and then he is happy — very happy — for a few days. For soon he becomes familiar with his new situation, and by degrees he ceases to feel his fancied happiness. With indifference he puts on the fine clothing after which he sighed. He has got into a new circle, he associates with other companions, he drinks of another cup, he aspires to another step, and if he ever turns his reflections upon himself, he feels that if his fortune has changed, his soul remains the same, and is still an inexhaustible spring of new desires."

There are other important respects in which human wants differ from those of the inferior animals. In addition to those primary appetites which he shares with the humblest living creature, and which relate exclusively to things, man has also, in a peculiar degree, affections which relate to persons; and various desires which are only conceivable with reference to abstractions, and result not from any physical antecedent but from

operations of the mind. By the aid of memory, which recalls the past; and of imagination, which represents the distant, the absent, and the future; and of reason, which exercises a judgment upon the utility present or prospective of an object, and upon the means of obtaining it, man forms desires concerning his personal safety, his family, and his property. These desires, like those already described, become, by the force of habit, daily more persistent and intense. To this class of desires no limit can be assigned other than the mental powers of each individual. These wants, except those relating to the family, might arise in a man isolated from all other beings of the same kind. But man is by the constitution of his nature a social being. Beginning with the family, he soon forms relations with other men, and lives, and moves, and has his being in society. Hence arise new desires, each of which, like every other desire, is intensified and confirmed by habit. Man is imitative, and so seeks to have what his neighbor enjoys; he is vain, and so desires to display himself and his possessions with advantage before his fellows; he loves superiority, and so seeks to show something that others have not; he dreads inferiority, and so seeks to possess what others also possess. Hence it is that, as daily experience teaches us, no man ever attains the state in which he has no wish ungratified. The greater the development of the mental and moral faculties, the greater will be the number of desires; the more continuous the gratification of these desires, the more confirmed will be the habit.

Human desires are indefinite not only as to their extent but as to their objects. The capacity of desire is strengthened and extended by exercise, but the desire is not necessarily felt for the same things. There are some objects to the use of which strict physical limits are set. There are others for which the pleasure depends, in a great degree, upon their scarcity. But in hardly any case does the increase of the object bring with it a proportionate increase of enjoyment. The sameness soon palls upon the taste; and if, as is usually the case, an extraordinary quantity of one object involve a corresponding diminution in the supply of others, one faculty or class of faculties is gratified

to the full extent that its nature will bear, while the other faculties are left unsupplied.

Not merely is the amount of human desire indefinite, but the modes in which desire in many different individuals is manifested, are equally without any practical limit. Even in the primary appetites there is room for great diversity, according to differences of climate, age, sex, and other considerations, in the choice of food, and the construction of houses, and the fashion of clothes. In the desires which are peculiar to man we seldom find agreement. The diversity of individual tastes is proverbial. Two persons will often regard with very different feeling the same object. The same man will at different times and in different circumstances experience great changes in his desires and his aversions. There is, however, a remarkable distinction in the facility with which desires can be appeased. It is in those cases in which the commodity is essential to our existence or our comfort that the limit to our gratification is soonest reached. Our most irrepressible appetites are the most quickly satisfied. Our most insatiable desires are the most easily repressed. Were it otherwise, with the present predominance of the self-regarding affections, the accumulation of the wealthy might interfere with the existence of the poor. Desire, too, is never transformed into a want, strictly so called, — that is, into painful desire, — until it has been made such by habit; in other words, until the means of satisfying the desire have been found and placed irrevocably within our reach.

It is not difficult to perceive the cause of this diversity of desire, or to trace the circumstances on which the development of our wants depends. That cause is found where at first it might not be expected, but where its presence is consistent with a deeper investigation of our nature, — in the state of our intellectual development. Beyond the mere primary appetites no other want can make itself known except through some mental operation. Our actions depend upon our will, and our will depends upon our judgment. If we seek to obtain any object, it is because we desire it; if we desire it, it is because we have formed some notion of its nature, and some judgment upon its

suitability to our purposes. According, then, to the degree with which we are acquainted with external objects, and to the power that we possess of judging of their relations to ourselves and to other things, our capacity of desire will be extended. Our desires, too, are subject to our will, and admit of being repressed or encouraged without assignable limits. It therefore depends upon the education, in the widest sense of that term, of each individual, and upon his character as mainly resulting from that education, how many and what kinds of objects, and with what degree of persistency, he desires. The more complete the intellectual development, the wider will be the field of desire; and, by the usual reaction in our mental nature, the wider the field of desire, the stronger will be the inducements to intellectual effort for the continuance of means to gratify these desires. On the contrary, the narrower our field of thought, the more contracted and the more humble will be our desires; and the less, consequently, will be the inducement to incur that continuous exertion of mind or body that industry implies. Where intelligence therefore prevails, the number of desires and the power of satisfying them will be alike great; where intelligence is small, the number of desires and the power of satisfying them will also be small. If this principle be true of individuals taken separately, it will not cease to be true of them when they are regarded as forming the aggregate that we term a nation.

It requires but little observation to perceive the confirmation which these reasonings obtain from actual experiences. We know that the desires of educated men are more varied and more extended than those of persons without education. We know that the wages of educated men are higher, and consequently their means of gratifying their desires greater, than those of the uneducated. If an educated man be reduced by misfortune, we sympathize with the disproportion between his desires and his means of satisfying them. If an uneducated man become suddenly rich, we see that, from the limited extent of his former wants and the undeveloped condition of his desires, he literally does not know what to do with his money, and rushes into the most extravagant and ludicrous follies.

We see that if a man be content, like a dog, to eat his dinner and to sleep, his nature will gradually sink to that of a brute. The higher faculties will waste from disuse; the lower, in the absence of restraint, and from habitual exercise, will acquire a complete predominance. On the other hand, those nations and those classes of a nation who stand highest in the scale of civilization are those whose wants, as experience shows us, are the most numerous, and whose efforts to satisfy those wants are the most unceasing.

Nothing, therefore, can be further from the truth than the ascetic doctrine of the paucity and the brevity of human wants. So far from man wanting little here below, his wants are indefinite, and never cease to be so during his whole existence. Nor is there anything immoral in such a view. The supposed inconsistency arises from a confusion of apathy with content. The former term implies that the development of desire is repressed; the latter that it is regulated. Content is a judgment that, upon the whole, we cannot with our existing means improve our position, along with an unmurmuring submission to the hardships, if any, of that position. Its aim is not to satisfy desires, but to appease complaint; it is consequently not inconsistent with the most active efforts to alter that combination of circumstances upon which the judgment was formed. "The desire of amelioration, it has been truly said, is not less a moral principle than patience under afflictions; and the use of content is not to destroy, but to regulate and direct it."

So far from our wants being unworthy of our higher nature, we can readily trace their moral function and appreciate its importance. They not only prevent our retrogression, but secure our advancement. Our real state of nature consists not in the repression, but in the full development and satisfaction, of all those faculties of which our nature consists. Such a state is found not in the poverty of the naked savage, but in the wealth of the civilized man. It is the constant and powerful impulse of our varied and insatiable desires that urges us to avoid the one state and to tend towards the other. "Wants and enjoyments," says Bentham, "these universal agents in

society, after having raised the first ears of corn, will by degrees erect the granaries of abundance, always increasing and always full. Desires extend themselves with the means of gratification; the horizon is enlarged in proportion as we advance, and each new want, equally accompanied by its pleasure and its pain, becomes a new principle of action. Opulence, which is only a comparative term, does not arrest this movement when once it has begun; on the contrary, the greater the means, the greater the field of operations, the greater the reward, and consequently the greater the force of the motive which actuates the mind. But in what does the wealth of society consist, if not in the total of the wealth of the individuals composing it? And what more is required than the force of those natural motives for carrying the increase of wealth to the highest possible degree?" But these wants do not stimulate our acquisitive and inventive powers only. They also serve to discipline our moral nature. Many of man's proceedings are slow in their nature, and so he must practice patience. In like manner, he must expend some of his acquisitions with the view of acquiring more; and thus in addition to patience he must exercise hope. One great means of increasing his power is coöperation with his fellow-men; he must therefore, to some extent, subordinate or at least assimilate his will to theirs, and so he must learn forbearance. Thus the efforts that we make for the satisfaction of our wants supply the means for developing both our intellectual and our moral faculties.

The subject of this inquiry is the efforts made by man to secure enjoyment. The particular character of any enjoyable object is therefore, for the present purpose, indifferent. The question is not whether a given object be conducive to our general well-being, but simply whether it be enjoyable. If it be enjoyable, it is foreign to the purpose to consider whether the enjoyment to which it contributes be unmeaning or even immoral; or whether it be embodied in a tangible shape; or be merely a fleeting gratification of the sense; or be a permanent benefit to the body or the mind. We pass no judgment upon the character of the want or upon the manner in which it should

be regulated. For our purposes wants are simply motives of varying power which universally exist, and the laws of which we propose to investigate. We have to deal with them merely as forces, without any other estimate of their characters than the intensity with which they are felt by the persons who experience them. Nor are we any more concerned to appreciate the character of the means of enjoyment than we are to appreciate the character of the want. It is enough that the want is felt, and that it can be satisfied.

2. The Theory of Utility[1]

Utility is not an Intrinsic Quality

My principal work now lies in tracing out the exact nature and conditions of utility. It seems strange indeed that economists have not bestowed more minute attention on a subject which doubtless furnishes the true key to the problem of economics.

In the first place, utility, though a quality of things, is *no inherent quality*. It is better described as *a circumstance of things* arising out of their relation to man's requirements. As Senior most accurately says, "Utility denotes no intrinsic quality in the things which we call useful; it merely expresses their relations to the pains and pleasures of mankind." We can never, therefore, say absolutely that some objects have utility and others have not. The ore lying in the mine, the diamond escaping the eye of the searcher, the wheat lying unreaped, the fruit ungathered for want of consumers, have no utility at all. The most wholesome and necessary kinds of food are useless unless there are hands to collect and mouths to eat them sooner or later. Nor, when we consider the matter closely, can we say that all portions of the same commodity possess equal utility. Water, for instance, may be roughly described as the most useful of all substances. A quart of water per day has the high utility of saving a person from dying in a most distressing manner. Several

[1] By W. S. Jevons. Reprinted from Jevons's Theory of Political Economy, third edition [London, 1888].

gallons a day may possess much utility for such purposes as cooking and washing; but after an adequate supply is secured for these uses, any additional quantity is a matter of comparative indifference. All that we can say, then, is that water, up to a certain quantity, is indispensable; that further quantities will have various degrees of utility; but that beyond a certain quantity the utility sinks gradually to zero; it may even become negative, that is to say, further supplies of the same substance may become inconvenient and hurtful.

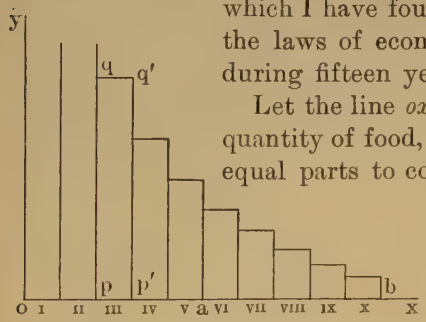
Exactly the same considerations apply more or less clearly to every other article. A pound of bread per day supplied to a person saves him from starvation, and has the highest conceivable utility. A second pound per day has also no slight utility; it keeps him in a state of comparative plenty, though it be not altogether indispensable. A third pound would begin to be superfluous. It is clear, then, that *utility is not proportional to commodity:* the very same articles vary in utility according as we already possess more or less of the same article. The like may be said of other things. One suit of clothes per annum is necessary, a second convenient, a third desirable, a fourth not unacceptable, but we sooner or later reach a point at which further supplies are not desired with any perceptible force unless it be for subsequent use.

Law of the Variation of Utility

Let us now investigate this subject a little more closely. Utility must be considered as measured by, or even as actually identical with, the addition made to a person's happiness. It is a convenient name for the aggregate of the favorable balance of feeling produced, — the sum of the pleasure created and the pain prevented. We must now carefully discriminate between the *total utility* arising from any commodity and the utility attaching to any particular portion of it. Thus the total utility of the food we eat consists in maintaining life, and may be considered as infinitely great; but if we were to subtract a tenth part from what we eat daily, our loss would be but slight. We

should certainly not lose a tenth part of the whole utility of food to us. It might be doubtful whether we should suffer any harm at all.

Let us imagine the whole quantity of food which a person consumes on an average during twenty-four hours to be divided into ten equal parts. If his food be reduced by the last part, he will suffer but little; if a second tenth part be deficient, he will feel the want distinctly; the subtraction of the third tenth part will be decidedly injurious; with every subsequent subtraction of a tenth part his sufferings will be more and more serious, until at length he will be upon the verge of starvation. Now, if we call each of the tenth parts *an increment*, the meaning of these facts is, that each increment of food is less necessary, or possesses less utility, than the previous one. To explain this variation of utility we may make use of space representations, which I have found convenient in illustrating the laws of economics in my college lectures during fifteen years past.



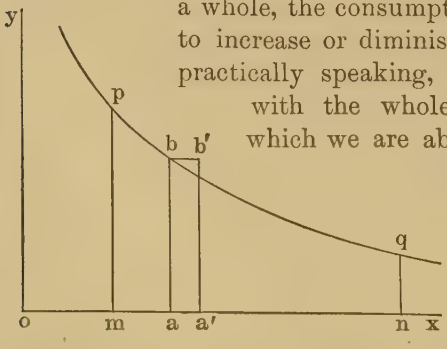
Let the line *ox* be used as a measure of the quantity of food, and let it be divided into ten equal parts to correspond to the ten portions of food mentioned above. Upon these equal lines are constructed rectangles, and the area of each rectangle may be assumed to represent the utility of the increment of food corresponding to its base. Thus the utility of the last increment is small, being proportional to the small rectangle on X. As we approach towards *o*, each increment bears a larger rectangle, that standing upon III being the largest complete rectangle. The utility of the next increment, II, is undefined, as also that of I, since these portions of food would be indispensable to life, and their utility, therefore, infinitely great.

We can now form a clear notion of the utility of the whole food, or of any part of it, for we have only to add together the proper rectangles. The utility of the first half of the food will

be the sum of the rectangles standing on the line *oa*; that of the second half will be represented by the sum of the smaller rectangles between *a* and *b*. The total utility of the food will be the whole sum of the rectangles, and will be infinitely great.

The comparative utility of the several portions is, however, the most important. Utility may be treated as *a quantity of two dimensions*, one dimension consisting in the quantity of the commodity, and another in the intensity of the effect produced upon the consumer. Now the quantity of the commodity is measured on the horizontal line *ox*, and the intensity of utility will be measured by the length of the upright lines, or *ordinates*. The intensity of utility of the third increment is measured either by *pq*, or *p'q'*, and its utility is the product of the units in *pp'* multiplied by those in *pq*.

But the division of the food into ten equal parts is an arbitrary supposition. If we had taken twenty or a hundred or more equal parts, the same general principle would hold true, namely, that each small portion would be less useful and necessary than the last. The law may be considered to hold true theoretically, however small the increments are made; and in this way we shall at last reach a figure which is undistinguishable from a continuous curve. The notion of infinitely small quantities of food may seem absurd as regards the consumption of one individual; but when we consider the consumption of a nation as a whole, the consumption may well be conceived to increase or diminish by quantities which are, practically speaking, infinitely small compared with the whole consumption. The laws which we are about to trace out are to be conceived as theoretically true of the individual; they can only be practically verified as regards the aggregate transactions, productions, and consumptions of a large body of people. But the laws of the aggregate depend of course upon the laws applying to individual cases.



The law of the variation of the degree of utility of food may thus be represented by a continuous curve *pbq*, and the perpendicular height of each point at the curve above the line *ox* represents the degree of utility of the commodity when a certain amount has been consumed.

Thus, when the quantity *oa* has been consumed, the degree of utility corresponds to the length of the line *ab*; for if we take a very little more food, *aa'*, its utility will be the product of *aa'* and *ab* very nearly, and more nearly the less is the magnitude of *aa'*. The degree of utility is thus properly measured by the height of a very narrow rectangle corresponding to a very small quantity of food, which theoretically ought to be infinitely small.

Total Utility and Degree of Utility

We are now in a position to appreciate perfectly the difference between the *total utility* of any commodity and the *degree of utility* of the commodity at any point. These are, in fact, quantities of altogether different kinds, the first being represented by an area, and the second by a line. We must consider how we may express these notions in appropriate mathematical language.

Let x signify, as is usual in mathematical books, the quantity which varies independently, — in this case the quantity of commodity. Let u denote the *whole utility* proceeding from the consumption of x. Then u will be, as mathematicians say, *a function of x;* that is, it will vary in some continuous and regular, but probably unknown, manner, when x is made to vary. Our great object at present, however, is to express the *degree of utility.*

Mathematicians employ the sign Δ prefixed to a sign of quantity, such as x, to signify that a quantity of the same nature as x, but small in proportion to x, is taken into consideration. Thus Δx means a small portion of x, and $x + \Delta x$ is therefore a quantity a little greater than x. Now when x is a quantity of commodity, the utility of $x + \Delta x$ will be more than that of x as a general rule. Let the whole utility of $x + \Delta x$ be denoted

by $u + \Delta u$; then it is obvious that the increment of utility Δu belongs to the increment of commodity Δx; and if, for the sake of argument, we suppose the degree of utility uniform over the whole of Δx, which is nearly true, owing to its smallness, we shall find the corresponding degree of utility by dividing Δu by Δx.

We find these considerations fully illustrated by the last figure, in which *oa* represents x, and *ab* is the degree of utility at the point *a*. Now, if we increase x by the small quantity *aá*, or Δx, the utility is increased by the small rectangle $abb'a'$, or Δu; and since a rectangle is the product of its sides, we find that the length of the line *ab*, the degree of utility, is represented by the fraction $\frac{\Delta u}{\Delta x}$.

As already explained, however, the utility of a commodity may be considered to vary with perfect continuity, so that we commit a small error in assuming it to be uniform over the whole increment Δx. To avoid this, we must imagine Δx to be reduced to an infinitely small size, Δu decreasing with it. The smaller the quantities are the more nearly we shall have a correct expression for *ab*, the degree of utility at the point *a*. Thus the *limit* of this fraction $\frac{\Delta u}{\Delta x}$, or, as it is commonly expressed, $\frac{du}{dx}$, is the degree of utility corresponding to the quantity of commodity x. *The degree of utility is*, in mathematical language, *the differential coefficient of u considered as a function of x*, and will itself be another function of x.

We shall seldom need to consider the degree of utility except as regards the last increment which has been consumed, or, which comes to the same thing, the next increment which is about to be consumed. I shall therefore commonly use the expression *final degree of utility*, as meaning the degree of utility of the last addition, or the next possible addition of a very small, or infinitely small, quantity to the existing stock. In ordinary circumstances, too, the final degree of utility will not be great compared with what it might be. Only in famine or other extreme circumstances do we approach the higher degrees

of utility. Accordingly we can often treat the lower portions of the curves of variation (*pbq*) which concern ordinary commercial transactions, while we leave out of sight the portions beyond *p* or *q*. It is also evident that we may know the degree of utility at any point while ignorant of the total utility, that is, the area of the whole curve. To be able to estimate the total enjoyment of a person would be an interesting thing, but it would not be really so important as to be able to estimate the additions and subtractions to his enjoyment which circumstances occasion. In the same way a very wealthy person may be quite unable to form any accurate statement of his aggregate wealth, but he may nevertheless have exact accounts of income and expenditure, that is, of additions and subtractions.

Variation of the Final Degree of Utility

The final degree of utility is that function upon which the theory of economics will be found to turn. Economists, generally speaking, have failed to discriminate between this function and the total utility, and from this confusion has arisen much perplexity. Many commodities which are most useful to us are esteemed and desired but little. We cannot live without water, and yet in ordinary circumstances we set no value on it. Why is this? Simply because we usually have so much of it that its final degree of utility is reduced nearly to zero. We enjoy every day the almost infinite utility of water, but then we do not need to consume more than we have. Let the supply run short by drought, and we begin to feel the higher degrees of utility, of which we think but little at other times.

The variation of the function expressing the final degree of utility is the all-important point in economic problems. We may state, as a general law, that *the degree of utility varies with the quantity of commodity, and ultimately decreases as that quantity increases.* No commodity can be named which we continue to desire with the same force, whatever be the quantity already in use or possession. All our appetites are capable of *satisfaction* or *satiety* sooner or later, in fact, both these words mean,

etymologically, that we have had *enough*, so that more is of no use to us. It does not follow, indeed, that the degree of utility will always sink to zero. This may be the case with some things, especially the simple animal requirements, such as food, water, air, etc. But the more refined and intellectual our needs become, the less are they capable of satiety. To the desire for articles of taste, science, or curiosity, when once excited, there is hardly a limit.

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Disutility and Discommodity

A few words will suffice to suggest that as utility corresponds to the production of pleasure, or, at least, a favorable alteration in the balance of pleasure and pain, so negative utility will consist in the production of pain, or the unfavorable alteration of the balance. In reality we must be almost as often concerned with the one as with the other ; nevertheless, economists have not employed any distinct technical terms to express that production of pain which accompanies so many actions of life. They have fixed their attention on the more agreeable aspect of the matter. It will be allowable, however, to appropriate the good English word *discommodity*, to signify any substance or action which is the opposite of *commodity*, that is to say, *anything which we desire to get rid of*, like ashes or sewage. Discommodity is, indeed, properly an abstract form signifying inconvenience, or disadvantage ; but as the noun *commodities* has been used in the English language for four hundred years at least as a concrete term, so we may now convert discommodity into a concrete term, and speak of *discommodities* as substances or things which possess the quality of causing inconvenience or harm. For the abstract notion, the opposite or negative of utility, we may invent the term *disutility*, which will mean something different from inutility, or the absence of utility. It is obvious that utility passes through inutility before changing into disutility, these notions being related as +, O, and −.

Distribution of Commodity in Different Uses

The principles of utility may be illustrated by considering the mode in which we distribute a commodity when it is capable of several uses. There are articles which may be employed for many distinct purposes: thus, barley may be used either to make beer, spirits, bread, or to feed cattle; sugar may be used to eat, or for producing alcohol; timber may be used in construction, or as fuel; iron and other metals may be applied to many different purposes. Imagine, then, a community in the possession of a certain stock of barley; what principles will regulate their mode of consuming it? Or, as we have not yet reached the subject of exchange, imagine an isolated family, or even an individual, possessing an adequate stock, and using some in one way and some in another. The theory of utility gives, theoretically speaking, a complete solution of the question.

Let s be the whole stock of some commodity, and let it be capable of two distinct uses. Then we may represent the two quantities appropriated to these uses by x_1 and y_1, it being a condition that $x_1 + y_1 = s$. The person may be conceived as successively expending small quantities of the commodity; now it is the inevitable tendency of human nature to choose that course which appears to offer the greatest advantage at the moment. Hence, when the person remains satisfied with the distribution he has made, it follows that no alteration would yield him more pleasure, which amounts to saying that an increment of commodity would yield exactly as much utility in one use as in another. Let Δu_1, Δu_2 be the increments of utility which might arise respectively from consuming an increment of commodity in the two different ways. When the distribution is completed, we ought to have $\Delta u_1 = \Delta u_2$; or at the limit we have the equation

$$\frac{du_1}{dx} = \frac{du_2}{dy},$$

which is true when x, y are respectively equal to x_1, y_1. We must, in other words, have the *final degrees of utility* in the two uses equal.

The same reasoning which applies to uses of the same commodity will evidently apply to any two uses, and hence to all uses simultaneously, so that we obtain a series of equations less numerous by a unit than the number of ways of using the commodity. The general result is that commodity, if consumed by a perfectly wise being, must be consumed with a maximum production of utility.

We should often find these equations to fail. Even when x is equal to $\frac{99}{100}$ of the stock, its degree of utility might still exceed the utility attaching to the remaining $\frac{1}{100}$ part in either of the other uses. This would mean that it was preferable to give the whole commodity to the first use. Such a case might perhaps be said to be not the exception but the rule; for whenever a commodity is capable of only one use, the circumstance is theoretically represented by saying that the final degree of utility in this employment always exceeds that in any other employment.

Under peculiar circumstances great changes may take place in the consumption of a commodity. In a time of scarcity the utility of barley as food might rise so high as to exceed altogether its utility, even as regards the smallest quantity, in producing alcoholic liquors; its consumption in the latter way would then cease. In a besieged town the employment of articles becomes revolutionized. Things of great utility in other respects are ruthlessly applied to strange purposes. In Paris a vast stock of horses was eaten, not so much because they were useless in other ways, as because they were needed more strongly as food. A certain stock of horses had, indeed, to be retained as a necessary aid to locomotion, so that the equation of the degrees of utility never wholly failed.

CHAPTER IX

THE LAW OF POPULATION

1. The Movement of Population [1]

I. Marriage

Marriage affects the movement of population only indirectly and in so far as, under a system of monogamy, it actually affects the number of births.

It is governed by motives that affect all men, and by others that affect particular individuals; it depends upon external conditions and subjective inclination, upon the economic situation, upon public legislation, and upon ecclesiastical regulation. Like migration, therefore, it is subject to great variation from time to time, and, more than any other phenomenon known to statistics, defies the so-called law of the numerical regularity of social phenomena. In Württemberg, for instance, the number of marriages in the year 1854 was 7905, while in 1871 it was 20,703, or nearly three times as large.

The decrease or increase of marriages sometimes affects economic conditions advantageously and sometimes disadvantageously. An increase indicates that at the time confidence in the future prevails; but in individual cases this confidence may just as easily prove mistaken as justified.

The annual number of marriages depends upon the composition of the population in respect of sex and age. In the long run not more than the regular yearly quota of young men of marriageable age can contract first marriages. If we assume that men normally marry between the ages of twenty-five and thirty, then each year one fifth of the men in this age group

[1] By Gustav von Rümelin. Translated from Schönberg's Handbuch der Politischen Oekonomie, I.

will marry for the first time. The number of such men in the German Empire was 7.38 per 1000 inhabitants in 1875, 7.12 per 1000 inhabitants in 1880, and 7.40 per 1000 in 1885, — an average of 7.3 per 1000. And in other countries, such as England and France,[1] the number does not vary much from these figures, since, as statistics show, the number of persons between the ages of twenty and thirty years is about the same whether population is increasing rapidly or slowly.

But now since 13.6 per cent of all married men contract second or third marriages, it would seem that for Germany the highest annual marriage rate would be 8.3 per 1000 inhabitants. But in reality such a figure could not be permanently maintained, since some men never marry. In the eight years from 1872 to 1879, inclusive, the average number of marriages did rise to 8.80 per 1000, but this was due to an extraordinary number of marriages contracted before the age of twenty-five or after the age of thirty. In other countries during the same period the figures were considerably lower: Switzerland, 7.6; Great Britain and Ireland, 7.3; Belgium, 7.3; Norway, 7; Sweden, 6.6. In France, however, the figures rose to 8 per 1000; but here, as in Germany, the number was abnormally large in the period following the war of 1870.[2] During the eighties the marriage rate in Europe was lower and more uniform than in the seventies. In France from 1880 to 1884 the average rate was 7.5 per 1000; in Germany at the same period it was 7.6; in England and Wales from 1879 to 1884 it was 7.4; in Italy for the same years it was 7.6; in Austria the rate was 7.8 from 1880 to 1884, and at the same time in

[1] In the United States in 1900 the number of males between the ages of twenty-five and twenty-nine, inclusive, was about 44 per 1000 of the whole population. This would make the yearly quota of marriageable males 8.8 per 1000. — Ed.

[2] In Massachusetts the number of persons marrying was materially affected by the Civil War:

1860 = 20.15 per 1000	1863 = 17.36 per 1000
1861 = 17.72 per 1000	1864 = 19.87 per 1000
1862 = 17.68 per 1000	1865 = 20.60 per 1000

1866 = 22.15 per 1000

By dividing these figures by 2, marriage rates can be computed comparable with those in the text. — Ed.

Belgium and Switzerland the figures were, respectively, 7 and 6.8; finally in Sweden a rate of 6.3 was maintained from 1880 to 1883.[1] It would seem, therefore, that a rate of 8 or more per 1000 can be maintained permanently only in countries where a considerable number of men marry before the age of twenty-five, such as Russia, Servia, and Hungary, or where marriages are easily and frequently terminated, and where consequently remarriages are numerous, as in Transylvania. Great variations above the normal marriage rate are always due to extraordinary conditions, and are followed naturally by reactionary movements. And just as regularly a marked reduction of the rate below the normal level is a sign of unfavorable economic conditions, and, at the best, a necessary remedy for the conditions produced by the previous excess in the number of marriages.

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The average duration of a marriage could be learned, if at all, only from family records, since it cannot be ascertained by a census. . . . It can be estimated, but only approximately, by gathering data for a series of normal years and then dividing the number of married couples by the number of marriages dissolved by death. The duration will, of course, be longer for early marriages than for marriages contracted later in life. According to the estimates of Wappäus, the duration of marriage is from twenty-one to twenty-six years; and for Germany and the countries of Middle Europe may approximate twenty-five years.

The same thing holds true of the average duration of fertility in marriages, that is, the average difference between the age of

[1] In 1900 the marriage rates in various European countries were as follows:

Hungary	8.9	Scotland	7.3
Belgium	8.6	Italy	7.2
Germany	8.5	Norway	7.0
England and Wales	8.0	Sweden	6.2
France	7.8	Ireland	4.8

In the New England States for the period 1893–1897 the marriage rates were:

New Hampshire	10.09	Maine	8.40
Massachusetts	9.05	Vermont	8.35
Rhode Island	8.55	Connecticut	7.85

These rates are above the average for Europe, probably because "the sexes are quite equally distributed and the proportion in the middle-age groups is large" (Bailey, Modern Social Conditions, p. 137). — Ed.

the first child and that of the last child born of a marriage. Direct information could be secured only from family records. From such a source it has been learned in Württemberg that the period of fertility in the average marriage approximates twelve years, and a computation based upon data taken from the Almanach de Gotha tends to confirm this conclusion.

Associated with these statistical concepts is that of a generation, by which is meant, not the total number of persons living at any one time, but the time required for one generation to succeed another, — the average difference of age between parents and children. The length of a generation, then, is computed by adding to the average age at which men marry one half of the average duration of fertility. For countries of early or later marriages, as well as of larger or smaller birth rates, it ranges between the somewhat wide limits of thirty-two to thirty-nine years. For the countries of Middle Europe it averages from thirty-four to thirty-five years. The length of a generation influences materially the social and political development of countries, since the rate of change is more rapid if the life of a generation is short, and is retarded if the life is longer.

From statistics based upon several million marriages in countries of Middle Europe it has been learned that, upon an average, 811 out of every 1000 marriages were first marriages for both of the contracting parties; that 106 were marriages of widowers to maidens; that 53 were between bachelors and widows; and that 30 were between widowers and widows. In this computation, however, divorced persons are counted as widowers or widows. In periods of economic depression it appeared that the proportion of marriages of widowers and widows increased because such persons, as a rule, already have an assured livelihood and do not have before them the struggle to establish themselves in the world. As an example of this tendency it suffices to state that in Württemberg between the years 1838 and 1857, a period which included the years of depression from 1845 to 1855, out of every 1000 marriages 185 were those of widowers and 81 were those of widows; whereas from 1871 to 1880 the marriages of widowers averaged 146 and those of widows, 67.

The average number of births to a marriage cannot be ascertained from census investigations, but only from family records, when these exist and are available. A summary, but at least approximately accurate, method of determining the average number of births per marriage is to divide the number of legitimate births for a series of normal years by the number of marriages contracted during the same period. For Germany this method of procedure gives us an average of 4.6 births per marriage during the period 1875 to 1884, while for France it gives an average of 3.1 for the period 1880 to 1884.[1]

The number of marriages contracted varies greatly for the different months of the year. In Germany it is affected, on the one hand, by the customs of the church, although the introduction of civil marriage has modified the situation materially. And, on the other hand, it is affected by economic motives which in agricultural districts tend to compress marriages into the seasons before and after the times when the crops demand most attention, thereby increasing the proportion contracted in mid-summer and mid-winter. If the average number of marriages is assumed to be 100 for each day in the year, then the average for November will be 153 per day; for October, 128; for May, 113; for February, 118; for April, 115; for January, 97; for September, 93; for June, 91; for July, 84; for December, 75; for August, 67; for March, 58.[2]

[1] In various European countries the number of births per marriage is as follows:

European Russia	(1890–1894) = 5.5	Prussia	(1890–1894) = 4.2
Italy	(1891–1895) = 4.4	Austria	(1890–1894) = 4.1
Sweden	(1890–1894) = 4.3	England	(1890–1894) = 3.8
	France (1890–1894) = 2.1		

In Massachusetts the statistics are as follows for various dates:

	Native	Foreign
1850	2.5	5.0
1860	1.9	3.5
1870	2.2	4.4
1880	2.2	5.0
1890	2.4	4.3

— Ed.

[2] Conditions are not the same in all countries. In the United States June is becoming the fashionable month for weddings, and in Massachusetts in 1901 more marriages took place in that month than in any other. During that year 18.22 per cent of all marriages in Massachusetts occurred during the first three months, 28.53 per cent occurred during the second quarter, 23.76 per cent in the third quarter, and 29.49 per cent in the fourth. — Ed.

II. Births

In order to obtain a satisfactory basis for measuring the frequency of births we must proceed upon the principle that the number of births does not depend upon the entire population of a country, but upon the number of women of child-bearing age. In tropical regions women reach this period as early as the age of nine or ten, in the south of Europe at the age of thirteen to fifteen, and in countries of the north temperate zone at the age of seventeen or eighteen. When the period is soonest reached it also is soonest ended. In warm climates women are grandmothers at the age of thirty; in colder climates they sometimes bear children at the age of fifty. However, the real period of fertility is not to be estimated by the extreme limits sometimes reached. The women who bear children at the age of sixteen are not the ones that bear them at the age of fifty, and we cannot base our estimates upon exceptional cases. If for the countries of Middle Europe the child-bearing age may be considered to extend normally from the age of eighteen to the age of forty, then we have twenty-two "year classes" of women capable of bearing children, which, as the age statistics of these countries show, constitute 165 out of every 1000 inhabitants.[1] If we use this percentage, without making allowance for unfruitful marriages (about 14 per cent of the whole number), then it follows that if two children are born to every woman between the ages of eighteen and forty, there will be 15 births yearly for each 1000 inhabitants. If three children are born to each woman, there will be 22.5 births; if four, there will be 30 births; if five, 37.5 births; if six, 45 births; and so on. Remembering that out of every four children, hardly three live to attain their majority, we may lay it down that a birth rate of 30, which means that four children are born to each woman, may be considered a fair average. Then a birth rate of less than 30 is to be considered low, and one materially greater than 30 is high or even excessive. In this estimate,

[1] In the United States in 1900 the females between the ages of eighteen and thirty-nine, inclusive, constituted 177 in every 1000 of the total population.

however, it is always to be remembered that since many women remain unmarried and many others are unfruitful, the actual number of children born to the others must be somewhat greater than our previous figures assume. It is now upon this basis that we must examine the statistics showing the birth rates of different countries.

From 1872 to 1877, including the stillborn, the average number of births each year for each 1000 inhabitants was as follows :

German Empire	41.7	Belgium	34.0
Austria	40.1	Switzerland	32.4
Italy	38.1	Sweden	31.6
England and Wales	37.1	France	27.3

Within the German Empire, Württemberg, Saxony, West Prussia, and Posen showed yet higher birth rates, which ranged from 45 to 47 ; while in Mecklenburg, Oldenburg, and Schleswig-Holstein the figures fell as low as 33. France and the German Empire stood at the opposite ends of the table, showing the extraordinary difference of 14.3 in their respective birth rates ; which meant that for every 100 births in France there were 153 in Germany.

During the eighties, when the marriage rate declined, the birth rate showed a considerable decrease in all countries. From 1880 to 1884 the average birth rates stood as follows : [1]

Austria	38.8	Belgium	32.4
German Empire	38.7	Sweden	30.6
Italy	37.5	Switzerland	30.3
England and Wales	34.7	France	25.8

From 1885 to 1887 the birth rate in France declined still further, to 23.5. The absolute figures make the contrast between

[1] For 1900 the figures are as follows :

Hungary	39.3	England and Wales	28.7
Austria	37.1	Belgium	28.9
Germany	35.6	Sweden	26.9
Italy	32.9	France	21.4

For Austria the figure here given is the average for the decade 1891 to 1900. — Ed.

France and Germany still more striking, since from 1885 to 1887 there were but 885,000 births in the former country as compared with 1,825,000 in the latter. This meant that Germany had twice as many births as France, although her population at the time was but one fourth larger.[1]

In general the birth rate is larger among the Germanic peoples than among the Romanic, while among the Slavic races it is still higher than among the Germans, as may be seen in the parts of Germany and Austria inhabited chiefly by Slavs. For

[1] No figures showing the birth rate are available for the United States. That the birth rate is decreasing, as in Europe, is shown by the following table, which shows the percentages which the number of children under ten years of age bears to the total population.

Census		Total Population	Population under 10 Years of Age	Per Cent of Total Population under 10 Years of Age
Continental United States :	1900	75,994,575	18,044,751	23.7
	1890	62,622,250	15,208,691	24.3
	1880	50,155,783	13,394,176	26.7
	1870	38,558,371	10,329,426	26.8
	1860	31,443,321	9,013,696	28.7
	1850	23,191,876	6,739,041	29.1
	1840	17,063,353	5,440,593	31.9
	1830	12,860,702	4,224,897	32.9
	1820	9,638,453	3,150,638	32.7
	1810	7,239,881	2,424,683	33.5
	1800	5,308,483	1,776,010	33.5

Still more significant are the following figures showing the number of children under five years of age for every 1000 females from fifteen to forty-nine years of age, inclusive :

Census		Number of Children under 5 Years of Age to 1000 Females 15 to 49 Years of Age
Continental United States :	1900	474
	1890	485
	1880	559
	1870	572
	1860	634
	1850	626

— Ed.

Russia only scattered and unreliable data are available; yet such figures as we have, combined with the well-known fact that marriages occur among the peasants at an early age and are exceedingly fruitful, make it very probable that the average birth rate is considerably above forty-five and altogether the highest in Europe. This is confirmed by the following statistics showing the average birth rates in more recent years:

Hungary (1878–1882)	42.0	West Prussia (1883)	45.5
Posen (1883)	44.2	Russia (1882)	49
Servia (1880–1884)	44.7		

All so-called laws of the frequency of births are untenable. The birth rate does not seem to depend upon the climate, upon differences of class or occupation, upon differences between city and country, or upon the density of the population. Yet it is influenced by national customs and beliefs as well as by changes in economic conditions. Such circumstances as dearness or cheapness of the necessaries of subsistence and the ease or difficulty of securing a livelihood influence the birth rate indirectly, since they affect materially the number of marriages. In recent decades in Württemberg the number of births has varied from 53,000 (in 1854) to 89,000 (in 1876). Further, a reciprocal relation exists between fertility and infant mortality, because, in a vicious circle, high fertility decreases the care given to children, while, on the other hand, a high infant mortality gives a motive for more and more births.

Of every 1000 deliveries 1011.7 children are born; that is, 1.17 per cent of all deliveries give multiple births, of which, in turn, 99 per cent are births of twins.

Statistics of the stillborn are defective. The usual and correct practice is to include the stillborn in the statistics of births and then of deaths, but in the English returns they are wholly omitted. It frequently happens that children dying soon after birth are included with the stillborn; while on the other hand, especially in Catholic countries, it must often happen that stillborn are confused with children privately baptized, and are returned as children dying after baptism. In the German Empire

from 1875 to 1884 stillbirths averaged 3.9 per cent of all births, and formed 5.6 per cent of all deaths. At the same period there were 129 male children stillborn for every 100 female, while of every 1000 legitimate births 38 were stillborn, and of every 1000 illegitimate births not less than 51.

A noteworthy fact, first discovered by Süssmilch in the eighteenth century, has occasioned much discussion. Since the time of Süssmilch data gathered concerning 200,000,000 births have placed it beyond all possible doubt. This is the invariable excess of male births over female, in the proportion of 106 to 100, or approximately 17 to 16. The result is that of every 1000 births, not 500, but 515 are of male children and 485 of female. In the German Empire an average for the twelve years from 1872 to 1883 gave a proportion of 106.3 to 100, while the individual years showed variations not ranging below 105.8 or above 106.7. We cannot here enter upon consideration of the further facts that the excess of males is greater with first births than with others, with legitimate than with illegitimate, and with Jews than with Christians. Neither can we consider the various unsuccessful attempts to explain this peculiar fact.

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Like marriages, births are unequally distributed among the various months of the year. The variations are not so marked in the case of births as they are in that of marriages, but they show the same general tendency. If the average number of births be taken as 100 for each day in the year, the statistics of the German Empire from 1872 to 1884 show that the average for February was 107 per day; for September, 105; for March, 104; for January, 103; for April and October, 100; for November and December, 99; for August, 98; for May, 97; for July, 96; and for June, 95.[1]

[1] In Massachusetts the distribution of births is different. Reduced to a standard of 100, the statistics from 1876 to 1895 showed the following result:

January = 95.6	April = 94.9	July = 104.1	October = 101.3
February = 98.6	May = 94.0	August = 106.6	November = 101.5
March = 98.0	June = 98.4	September = 104.4	December = 102.7

— Ed.

III. Deaths

High marriage and death rates are of only relative — and frequently doubtful — social advantage; but a low death rate is absolutely and undoubtedly advantageous. There is no more certain indication of social welfare, of good morals and institutions, and of sound economic conditions than the fact that a very large proportion of a nation's inhabitants attain the full natural limit of human life. A well-known passage in the Bible (Psalm xc. 10) places this limit at seventy, or, at the most, eighty years; but physiological reasons, actual experience with longevity, and historical facts justify the belief that these figures are too low. One might, perhaps, expect that where a considerable number of men leading a peaceful, civilized life reach an advanced age, the average duration of life would be fairly long; but statistics by no means justify such an expectation. They show that in Middle Europe, upon an average, not more than 18 persons out of every 100 reach the age of seventy, while only 11 reach the age of seventy-five and only 5 the age of eighty. Among some of the countries of modern Europe the average duration of life does not exceed forty years, and among others it falls considerably below that figure.

The general rate of mortality is better stated in percentages or as so many deaths in the thousand than in the earlier form of one death to every thirty or forty persons living. For various countries the average rate of mortality during the seventies stood as follows:

Austria	33.1
Italy	30.8
Germany	29.3
Switzerland	24.6
France	23.6
Belgium	23.3
England and Wales	23.3
Sweden	19.6

During the eighties, doubtless as a result of the decrease in births, the figures were lower, while the order of the countries in our table was somewhat altered:[1]

Hungary	34.9
Austria	30.8
Italy	28.7
Germany	27.3
Netherlands	24.4
France	23.5
Belgium	22.5
Switzerland	22.2
England and Wales	20.4
Sweden	18.8

The general rate of mortality, as here stated, is of limited value because it gives no indication of the relative vitality of the people of different countries. The rate is materially affected by the extent of infant mortality, and this in turn depends upon

[1] The following table is taken from the Twelfth Census of the United States, Supplementary Analysis, 495:

Comparative Death Rates per One Thousand Population for Certain Countries

Country	1890	Twenty-five Years 1876–1900	1900
Austria	29.4	28.6	25.4
Belgium	20.6	20.1	19.3
Denmark	19.0	18.3	16.9
England and Wales	19.5	19.1	18.2
France	22.8	21.9	21.9
German Empire	24.4	24.2	22.1
Prussia	24.0	23.7	21.8
Hungary	32.4	32.3	26.9
Ireland	18.2	18.2	19.6
Italy	26.4	26.5	23.8
Netherlands	20.5	20.3	17.8
Norway	17.9	16.6	15.9
Scotland	19.7	19.2	18.5
Spain	32.5	30.3	28.7
Sweden	17.1	17.0	16.8
Switzerland	20.8	20.6	19.3
United States (registration area)	19.6	. . .	17.8

Outside the "registration area," the death rate in the United States can be estimated only approximately. The best opinion is that it is not less than 17.8 or higher than 19.5. See W. F. Willcox, in *Publications of American Statistical Association*, September, 1906. — Ed.

the birth rate. The dangers that beset births and infancy, especially in the first year of life, are far greater than those encountered at any other age except the most advanced, and they affect the general rate of mortality more than any other factor. Children dying under the age of five years, including the stillborn, constitute 40 or 50 per cent of all deaths; and children dying in their first year of life constitute 30 or 40 per cent. Exclusive of the stillborn, 33.4 per cent of all the children born in Prussia died before the completion of their fifth year during the period 1865 to 1878, and 21.7 per cent died before reaching the age of one year. In Bavaria the figures stand, respectively, 39.6 and 31.6; in Württemberg they were 38.8 and 32.3; in Saxony, 38.5 and 32.3; in Baden, 34.6 and 27.1; in the Thuringian states, 30.8 and 22.1. For other European countries the percentages are: England and Wales, 25.1 and 15.2; France, 25 and 16.6; Italy, 38.7 and 21.8; Switzerland, 26.5 and 19.8; Norway, 18.3 and 10.7; Sweden, 22.2 and 13.7; Austria, 39.1 and 25.7; Belgium, 24.7 and 14.5. It is very clear that these variations in infant mortality must affect the general death rate very materially. In Württemberg the rate of infant mortality in the first year of life is three times as high as it is in Norway. In the various German states two thirds of the children born alive survive beyond the fifth year, while in England and France three fourths survive, and in Scandinavia, four fifths. Now the rate of infant mortality enables us to draw no conclusion, one way or the other, concerning the vitality of persons who reach the age of maturity; and at present the science of statistics does not enable us to ascertain further differences in the mortality of European nations.

In the same way existing data are inadequate to enable us to establish any generally valid principles concerning differences in the mortality rates of urban and rural populations, of agricultural and industrial workers, or of single and married persons, according to their class and occupation.

Upon the other hand, it is certain that poverty affects unfavorably the duration of life. This is not to say that the rich have a definite advantage over persons in moderate circumstances who

nevertheless have enough to support life, or that the peasant's or mechanic's expectation of life is less than that of a prince or millionaire; because in such cases the advantages and disadvantages appear to equalize themselves. But when actual want exists, involving insufficient food and clothing, unsanitary dwellings, lack of heat and cleanliness, and lack of proper care and medical attendance in sickness, the dangers to life are distinctly increased. It is at this point that epidemics and scarcity of provisions are especially felt, the latter bearing with particular severity upon the children of the poorer classes who are least able to endure the unfavorable change in their diet.

Then, too, it is not only probable, but established by a multitude of well-known facts, that morals and habits of living, that excesses, inebriety, sexual immorality, are extremely important factors in determining the rate of mortality. It is certain also that among able-bodied adults poverty is often deserved, and is due to shiftlessness or evil habits; so that the two chief causes of high mortality — vice and poverty — work in combination, each reënforcing the other.

It is incontestable, also, that there are differences in the healthfulness of the regions in which people live. Climate, geographical situation, seas and marshes, lack of drainage or good air, bad construction of houses, impure drinking water, and bad sanitary provisions very greatly affect the rate of mortality, as appears from the latest data concerning European cities. The science of hygiene has here an indefinite field for study.

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Concerning the influence of the seasons upon the rate of mortality we can only observe that in Germany the rate is highest in March and February, and is lowest in June and November. If the average number of deaths is 100 per day, then the averages for different months will vary from 90 to 110. August and September show the highest infant mortality; late winter and early spring are the most dangerous seasons for aged persons. In general the mortality for one year may vary considerably from that for the next, on account of differences in the weather. In Germany from 1872 to 1884 the relative

number of deaths for each month was as follows, the stillborn being excluded: March, 110; February, 109; April, 107; January, 103; May, 102; August, 101; September, 98; July, 97; December, 96; June, 94; November, 92; October, 91.[1] In these figures the mortality during the first half of the year is noticeably greater than in the second half.

IV. The Growth of Population

From the difference between the number of births and the number of deaths, and from that between the number of immigrants and the number of emigrants, results the movement or, under normal circumstances, the growth of population. We can distinguish between the absolute increase and the relative increase, i.e. the increase expressed in percentages; the chief interest attaches to the latter.

In computing the percentage of increase it is to be remembered that we must proceed as we would in computing compound interest. If thirty million people increase in sixty years to fifty million, we cannot reckon that, because an increase of 66.6 per cent occurred in sixty years, the yearly increase was 1.1 per cent. Nor can we say that the increase of twenty million persons in sixty years means an annual increase of 333,333, which would be 1.1 per cent of thirty million. The true rate of yearly increase is 0.86 per cent, as it would be computed if money were increasing at compound interest. For a short period of years the difference between the two methods is not large, but for longer periods it is very considerable; so that the first method of computation is wholly inadmissible.

It is by the same method that we should compute the time required for a population to double, — that is, the number of years in which, with a given rate of increase, a population will

[1] In the United States the distribution of deaths per 1000 in the registration area in 1900 was as follows:

January = 86.7	April = 99.3	July = 87.3	October = 73.2
February = 83.5	May = 86.2	August = 83.3	November = 70.5
March = 102.8	June = 73.7	September = 75.4	December = 78.1

— Ed.

double ; or, in case a population has doubled in a given period of time, the rate at which the increase has proceeded. In such computations it is better to reckon by the thousand than by the hundred, and on this basis the following table may be constructed to show the number of years required for given rates of annual increase to bring about a doubling of the population:

Rate of Increase	Years Required	Rate of Increase	Years Required
1 per 1000	696.0	11 per 1000	63.2
2 " "	348.0	12 " "	58.0
3 " "	232.0	13 " "	53.5
4 " "	174.0	14 " "	49.7
5 " "	139.0	15 " "	46.4
6 " "	116.0	20 " "	34.8
7 " "	95.0	25 " "	28.0
8 " "	87.0	30 " "	23.2
9 " "	77.0	40 " "	17.6
10 " "	69.6		

From what has been said above concerning birth and mortality rates it follows that normally there will be a not inconsiderable excess of births over deaths. An excess of deaths over births would indicate social disease or extraordinary disturbances. In modern times we have no instance in which deaths have exceeded births in any large district for a series of years. Great epidemics or wars would be required to produce such a result. It is somewhat unusual, also, for emigration from any district to be so large as to outweigh the natural excess of births over deaths.

But there is no particular rate of increase which can be called the normal rate. Birth rates in Europe vary from 25 to 50, and death rates vary from 17 to 38 ; while very different combinations of birth and death rates are possible, even though the highest birth rates are never accompanied by the lowest death rates. Our actual rate of increase at one time or in one country may be several times that occurring at another time or in another country.

It is much to be regretted that we cannot investigate the growth of population in earlier generations and centuries. In the greater part of Europe our census records do not begin until

the third decade of the nineteenth century; and before that time we have scattered and unsatisfactory data. For more remote times we have only such conclusions as can be drawn from casually recorded facts and figures gathered in a few localities.

In Europe at large it is probable that the population is about twice as large as it was a century ago. This would seem to indicate an annual increase of 6.9 persons per 1000. From 1820 to 1880 the population increased from 200,000,000 to 330,000,000, a yearly rate of over 8 per 1000. For Sweden we have adequate and satisfactory data reaching back to about the middle of the eighteenth century; and in that country the population stood at 1,785,727 in 1764, and 4,735,000 in 1887, — an increase of 164 per cent, or an annual rate of 7.4 per 1000.

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At various dates since 1816 the number of inhabitants within the present boundaries of the German Empire has stood as follows:

Year	Inhabitants (Millions)	Rate of Yearly Increase	Year	Inhabitants (Millions)	Rate of Yearly Increase
1816	24.83		1855	36.11	4.0
1820	26.29	14.3	1860	37.74	8.8
1825	28.11	13.4	1865	39.65	9.9
1830	29.51	9.8	1870	40.81	5.8
1835	30.93	9.4	1875	42.72	9.2
1840	32.78	11.6	1880	45.23	11.4
1845	34.39	9.6	1885	46.94	7.0
1850	35.39	5.7			

According to these figures the aggregate population increased 22,000,000 in 69 years, or 88.6 per cent, the average yearly increase being 0.96 per cent or 9.6 per 1000. . . . In the various five-year periods the average yearly rate of increase ranges from 4 to 14.3 per 1000, a fact which illustrates the variability of the rate of growth at different times. Equally large are the differences between the various German states. Between 1816 and 1885 the kingdom of Saxony increased from 1,178,000 inhabitants to 3,179,000, an aggregate increase of 170 per cent and a yearly rate of 15.4 per 1000. Bavaria advanced from 3,708,000 to 5,146,000, an aggregate growth of 46.7 per cent and a yearly rate of 5.7 per 1000. Württemberg advanced from

1,410,000 to 1,995,000, an aggregate increase of 41.3 per cent and a yearly rate of 5.1 per 1000. Old Prussia advanced from 10,350,000 to 23,400,000, an aggregate gain of 126 per cent and a yearly rate of 12.5 per 1000.

In 1821 the United Kingdom of Great Britain and Ireland had 21,270,000 inhabitants; in 1881 it had 35,200,000. Here the aggregate increase was 65.6 per cent, and the yearly rate 8.7 per 1000; but in England and Wales alone the increase was from 12,000,000 to 25,960,000, an aggregate gain of 116.4 per cent and a yearly rate of 13.7 per 1000.

In 1821 France, including Alsace-Lorraine but excluding Nice and Savoy, had 29,720,000 inhabitants; and in 1881, excluding Alsace-Lorraine and including Nice and Savoy, her inhabitants numbered 37,670,000. Making allowance for the change in boundaries, the real increase during these sixty years was approximately from 28,800,000 to 37,000,000, — a total increase of 28.4 per cent and a yearly gain of 4.2 per 1000. From 1876 to 1886 the population of France rose from 36,990,000 to 38,200,000, a total gain of 3.5 per cent and a yearly rate of 3.5 per 1000. The natural increase by the excess of births over deaths amounted to but 920,634, an average of 92,063 or 2.5 per 1000. The increase of the population above these figures was due to immigration. In Germany during the same period the excess of births over deaths was 5,389,000, or 5.8 times as great as in France.

In other countries of Europe the growth of population in the nineteenth century is shown in the following table:

Country	Date	Population (Millions)	Aggregate Increase	Yearly Rate (per 1000)
Austria	1820–1887	14.20 to 23.44	64.0%	7.7
Hungary	1820–1880	12.88 to 15.73	22.1%	3.4
Italy	1861–1887	25.01 to 30.26	21.1%	7.3
Sweden	1820–1887	2.58 to 4.73	83.4%	9.5
Belgium	1846–1887	4.33 to 5.97	38.0%	8.0
Netherlands	1829–1887	2.61 to 4.45	70.0%	9.5
Switzerland	1837–1888	2.19 to 2.92	33.0%	5.8
Denmark	1840–1880	1.28 to 1.96	53.0%	11.2

The growth of population in the United States admits of no comparison with European conditions. From 1790 to 1880 the census showed an increase from 3.9 millions to 50.4 millions, more than a twelvefold increase and a yearly gain of 28.8 per 1000.[1] It is to be remembered that during this time the area of the country grew from 819,000 to 3,561,000 square miles, and that at least 12,000,000 immigrants were added to the population. Now since 88 per cent of the immigrants were under forty years of age, — most of them able-bodied persons no longer subject to the dangers of childhood, — it follows that they contributed as much to the growth of numbers as 24,000,000 immigrants of mixed ages, such as are found in a normal population, would have contributed. . . .

At the opposite extreme, Ireland offers an example of a decreasing population. Her inhabitants numbered 8.2 millions in 1841, 6.55 millions in 1851, 5.8 millions in 1861, 5.4 millions in 1871, 5.2 millions in 1881, and 4.8 millions in 1888. Meanwhile the excess of births over deaths had been about 2.2 millions, so that the total loss of population by immigration was over 5,000,000. The causes of this singular phenomenon, which cannot be paralleled in any other country, do not need to be considered here.

[1] The figures by decades are as follows:

Census Years	Population Excluding Alaska, Hawaii, Indian Territory, Indian Reservations, etc.	Increase	
		Number	Per Cent
1900	75,568,686	12,946,436	20.7
1890	62,622,250	12,466,467	24.9
1880	50,155,783	11,597,412	30.1
1870	38,558,371	7,115,050	22.6
1860	31,443,321	8,251,445	35.6
1850	23,191,876	6,122,423	35.9
1840	17,069,453	4,203,433	32.7
1830	12,866,020	3,227,567	33.5
1820	9,638,453	2,398,572	33.1
1810	7,239,881	1,931,398	36.4
1800	5,308,483	1,379,269	35.1
1790	3,929,214	. . . .	. .

— Ed.

Leaving out of account the exceptional cases of Ireland and the United States, the figures for European countries show that the growth of population may vary greatly in different countries and different periods of time. The examples of Hungary (with a rate of growth of 3.4 per 1000) and Saxony (with a rate of 15.4 per 1000) show that the growth of one country may be four or five times as rapid as that of another. It appears, too, that, in spite of greater losses by emigration, the Germanic peoples have far outstripped the Romanic; that the states of Middle and Northern Germany have surpassed the South German states; and that in general the countries of Northern Europe have grown more rapidly than those of Southern Europe. Upon the whole, a yearly increase of less than 5 per 1000 may be considered small, an increase of from 5 to 7 per 1000 is moderate, and an increase of more than 10 per 1000 is very large. . . .

At the present time we may compute in round numbers that, upon an average, 12,000,000 children are born in Europe each year, that 9,000,000 persons die, that the yearly excess of births is 3,000,000, and that of this number 500,000 are lost by emigration. The annual increase of population, therefore, is 2,500,000, which means a yearly gain of 7.6 per 1000, a gain of 25,000,000, every 10 years, and a doubling of the population every 90 years.

It is obvious that a yearly increase of 10 per 1000 may be had with a birth rate of 40 and a death rate of 30, or with a birth rate of 30 and a death rate of 20. It is evident, too, that it is not a matter of indifference whether the result is reached in the one way or the other, but that it is much better to have the increase come from the smaller birth rate accompanied by the smaller death rate. In this respect the Scandinavian countries have an advantage over the German. Norway had an average of 30.5 births and 17.3 deaths between 1865 and 1878, while the German Empire between 1872 and 1879 had 41.4 births and 28.6 deaths. The least favorable condition is found in Hungary, where between 1865 and 1877 there were a birth rate of 41.8, a death rate of 38, and a yearly

increase of only 3.8 per 1000. Among the German states Württemberg has the highest birth and death rates and the smallest excess of births over deaths.

2. The Doctrine of Malthus[1]

I. Statement of the Subject. Ratios of the Increase of Population and Food

In an inquiry concerning the improvement of society the mode of conducting the subject which naturally presents itself is,

1. To investigate the causes that have hitherto impeded the progress of mankind towards happiness; and

2. To examine the probability of the total or partial removal of these causes in the future.

To enter fully into this question and to enumerate all the causes that have hitherto influenced human improvement would be much beyond the power of an individual. The principal object of the present essay is to examine the effects of one great cause intimately united with the very nature of man; which, though it has been constantly and powerfully operating since the commencement of society, has been little noticed by the writers who have treated this subject. The facts which establish the existence of this cause have, indeed, been repeatedly stated and acknowledged; but its natural and necessary effects have been almost totally overlooked; though probably among these effects may be reckoned a very considerable portion of that vice and misery, and of that unequal distribution of the bounties of nature, which it has been the unceasing object of the enlightened philanthropist in all ages to correct.

The cause to which I allude is the constant tendency in all animated life to increase beyond the nourishment prepared for it.

It is observed by Dr. Franklin that there is no bound to the prolific nature of plants or animals but what is made by their

[1] From An Essay on the Principle of Population, chaps. i and ii, by T. R. Malthus [sixth edition, 1826]. The essay was originally published in 1798. For differences between the first and later editions see Ashley's edition [New York, 1895].

crowding and interfering with each other's means of subsistence. Were the face of the earth, he says, vacant of other plants, it might be gradually sowed and overspread with one kind only, as for instance with fennel; and were it empty of other inhabitants, it might in a few ages be replenished from one nation only, as for instance with Englishmen.

This is incontrovertibly true. Through the animal and vegetable kingdoms nature has scattered the seeds of life abroad with the most profuse and liberal hand, but has been comparatively sparing in the room and the nourishment necessary to rear them. The germs of existence contained in this earth, if they could freely develop themselves, would fill millions of worlds in the course of a few thousand years. Necessity, that imperious, all-pervading law of nature, restrains them within the prescribed bounds. The race of plants and the race of animals shrink under this great restrictive law; and man cannot by any efforts of reason escape from it.

In plants and irrational animals the view of the subject is simple. They are all impelled by a powerful instinct to the increase of their species; and this instinct is interrupted by no doubts about providing for their offspring. Wherever therefore there is liberty, the power of increase is exerted; and the superabundant effects are repressed afterwards by want of room and nourishment.

The effects of this check on man are more complicated. Impelled to the increase of his species by an equally powerful instinct, reason interrupts his career, and asks him whether he may not bring beings into the world for whom he cannot provide the means of support. If he attend to this natural suggestion, the restriction too frequently produces vice. If he hear it not, the human race will be constantly endeavoring to increase beyond the means of subsistence. But as, by that law of our nature which makes food necessary to the life of man, population can never actually increase beyond the lowest nourishment capable of supporting it, a strong check on population, from the difficulty of acquiring food, must be constantly in operation. This difficulty must fall somewhere, and must

necessarily be severely felt in some or other of the various forms of misery, or the fear of misery, by a large portion of mankind.

That population has this constant tendency to increase beyond the means of subsistence, and that it is kept to its necessary level by these causes will sufficiently appear from a review of the different states of society in which man has existed. But before we proceed to this review the subject will, perhaps, be seen in a clearer light, if we endeavor to ascertain what would be the natural increase of population if left to exert itself with perfect freedom, and what might be expected to be the rate of increase in the productions of the earth under the most favorable circumstances of human industry.

It will be allowed that no country has hitherto been known where the manners were so pure and simple, and the means of subsistence so abundant, that no check whatever has existed to early marriages from the difficulty of providing for a family, and that no waste of the human species has been occasioned by vicious customs, by towns, by unhealthy occupations, or too severe labor. Consequently, in no state that we have yet known has the power of population been left to exert itself with perfect freedom.

Whether the law of marriage be instituted or not, the dictates of nature and virtue seem to be an early attachment to one woman; and where there were no impediments of any kind in the way of an union to which such an attachment would lead, and no causes of depopulation afterwards, the increase of the human species would be evidently much greater than any increase which has hitherto been known.

In the Northern States of America, where the means of subsistence have been more ample, the manners of the people more pure, and the checks to early marriages fewer than in any of the modern states of Europe, the population has been found to double itself, for above a century and a half successively, in less than twenty-five years. Yet, even during these periods, in some of the towns the deaths exceeded the births, a circumstance which clearly proves that, in those parts of the country which

supplied this deficiency, the increase must have been much more rapid than the general average.

In the back settlements, where the sole employment is agriculture, and vicious customs and unwholesome occupations are little known, the population has been found to double itself in fifteen years. Even this extraordinary rate of increase is probably short of the utmost power of population. Very severe labor is requisite to clear a fresh country; such situations are not in general considered as particularly healthy; and the inhabitants, probably, are occasionally subject to the incursions of the Indians, which may destroy some lives, or at any rate diminish the fruits of industry.

According to a table of Euler, calculated on a mortality of one to thirty-six, if the births be to the deaths in the proportion of three to one, the period of doubling will be only twelve years and four fifths. And this proportion is not only a possible supposition, but has actually occurred for short periods in more countries than one.

Sir William Petty supposes a doubling possible in so short a time as ten years.

But, to be perfectly sure that we are far within the truth, we will take the slowest of these rates of increase, a rate in which all concurring testimonies agree, and which has been repeatedly ascertained to be from procreation only.

It may safely be pronounced, therefore, that population, when unchecked, goes on doubling itself every twenty-five years, or increases in a geometrical ratio.

The rate according to which the productions of the earth may be supposed to increase it will not be so easy to determine. Of this, however, we may be perfectly certain, — that the ratio of their increase in a limited territory must be of a totally different nature from the ratio of the increase of population. A thousand millions are just as easily doubled every twenty-five years by the power of population as a thousand. But the food to support the increase from the greater number will by no means be obtained with the same facility. Man is necessarily confined in room. When acre has been added to acre till all the fertile

land is occupied, the yearly increase of food must depend upon the melioration of the land already in possession. This is a fund which, from the nature of all soils, instead of increasing, must be gradually diminishing. But population, could it be supplied with food, would go on with unexhausted vigor; and the increase of one period would furnish the power of a greater increase the next, and this without any limit.

From the accounts we have of China and Japan, it may be fairly doubted whether the best-directed efforts of human industry could double the produce of these countries even once in any number of years. There are many parts of the globe, indeed, hitherto uncultivated and almost unoccupied, but the right of exterminating, or driving into a corner where they must starve, even the inhabitants of these thinly-peopled regions, will be questioned in a moral view. The process of improving their minds and directing their industry would necessarily be slow; and during this time, as population would regularly keep pace with the increasing produce, it would rarely happen that a great degree of knowledge and industry would have to operate at once upon rich unappropriated soil. Even where this might take place, as it does sometimes in new colonies, a geometrical ratio increases with such extraordinary rapidity that the advantage could not last long. If the United States of America continue increasing, which they certainly will do, though not with the same rapidity as formerly, the Indians will be driven further and further back into the country, till the whole race is ultimately exterminated and the territory is incapable of further extension.

These observations are, in a degree, applicable to all the parts of the earth where the soil is imperfectly cultivated. To exterminate the inhabitants of the greatest part of Asia and Africa is a thought that could not be admitted for a moment. To civilize and direct the industry of the various tribes of Tartars and negroes would certainly be a work of considerable time, and of variable and uncertain success.

Europe is by no means so fully peopled as it might be. In Europe there is the fairest chance that human industry may receive its best direction. The science of agriculture has been

much studied in England and Scotland, and there is still a great portion of uncultivated land in these countries. Let us consider at what rate the produce of this island might be supposed to increase under circumstances the most favorable to improvement.

If it be allowed that by the best possible policy, and great encouragement to agriculture, the average produce of the island could be doubled in the first twenty-five years, it will be allowing, probably, a greater increase than could with reason be expected.

In the next twenty-five years it is impossible to suppose that the produce could be quadrupled. It would be contrary to all our knowledge of the properties of land. The improvement of the barren parts would be a work of time and labor; and it must be evident, to those who have the slightest acquaintance with agricultural subjects, that in proportion as cultivation extended, the additions that could yearly be made to the former average produce must be gradually and regularly diminishing. That we may be the better able to compare the increase of population and food, let us make a supposition which, without pretending to accuracy, is clearly more favorable to the power of production in the earth than any experience we have had of its qualities will warrant.

Let us suppose that the yearly additions which might be made to the former average produce, instead of decreasing, which they certainly would do, were to remain the same; and that the produce of this island might be increased every twenty-five years by a quantity equal to what it at present produces. The most enthusiastic speculator cannot suppose a greater increase than this. In a few centuries it would make every acre of land in the island like a garden.

If this supposition be applied to the whole earth, and if it be allowed that the subsistence for man which the earth affords might be increased every twenty-five years by a quantity equal to what it at present produces, this will be supposing a rate of increase much greater than we can imagine that any possible exertions of mankind could make it.

It may be fairly pronounced, therefore, that considering the present average state of the earth, the means of subsistence, under circumstances the most favorable to human industry, could not possibly be made to increase faster than in an arithmetical ratio.

The necessary effects of these two different rates of increase, when brought together, will be very striking. Let us call the population of this island eleven millions; and suppose the present produce equal to the easy support of such a number. In the first twenty-five years the population would be twenty-two millions, and the food being also doubled, the means of subsistence would be equal to this increase. In the next twenty-five years the population would be forty-four millions, and the means of subsistence only equal to the support of thirty-three millions. In the next period the population would be eighty-eight millions, and the means of subsistence just equal to the support of half that number. And at the conclusion of the first century the population would be a hundred and seventy-six millions, and the means of subsistence only equal to the support of fifty-five millions, leaving a population of a hundred and twenty-one millions totally unprovided for.

Taking the whole earth instead of this island, emigration would of course be excluded; and, supposing the present population equal to a thousand millions, the human species would increase as the numbers, 1, 2, 4, 8, 16, 32, 64, 128, 256, and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9. In two centuries the population would be to the means of subsistence as 256 to 9; in three centuries, as 4096 to 13; and in two thousand years the difference would be almost incalculable.

In this supposition no limits whatever are placed to the produce of the earth. It may increase forever, and be greater than any assignable quantity; yet still, the power of population being in every period so much superior, the increase of the human species can only be kept down to the level of the means of subsistence by the constant operation of the strong law of necessity, acting as a check upon the greater power.

II. Of the General Checks to Population, and the Mode of their Operation

The ultimate check to population appears then to be a want of food arising necessarily from the different ratios according to which population and food increase. But this ultimate check is never the immediate check, except in cases of actual famine.

The immediate check may be stated to consist in all those customs, and all those diseases, which seem to be generated by a scarcity of the means of subsistence; and all those causes, independent of this scarcity, whether of a moral or physical nature, which tend prematurely to weaken and destroy the human frame.

These checks to population, which are constantly operating with more or less force in every society, and keep down the number to the level of the means of subsistence, may be classed under two general heads, — the preventive, and the positive checks.

The preventive check, as far as it is voluntary, is peculiar to man, and arises from that distinctive superiority in his reasoning faculties which enables him to calculate distant consequences. The checks to the indefinite increase of plants and irrational animals are all either positive, or, if preventive, involuntary. But man cannot look around him and see the distress which frequently presses upon those who have large families; he cannot contemplate his present possessions or earnings, which he now nearly consumes himself, and calculate the amount of each share, when with very little addition they must be divided, perhaps, among seven or eight, without feeling a doubt whether, if he follow the bent of his inclinations, he may be able to support the offspring which he will probably bring into the world. In a state of equality, if such can exist, this would be the simple question. In the present state of society other considerations occur. Will he not lower his rank in life, and be obliged to give up in great measure his former habits? Does any mode of employment present itself by which he may reasonably hope to maintain a family? Will he not at any rate subject himself to

greater difficulties and more severe labor than in his single state? Will he not be unable to transmit to his children the same advantages of education and improvement that he had himself possessed? Does he even feel secure that, should he have a large family, his utmost exertions can save them from rags and squalid poverty, and their consequent degradation in the community? And may he not be reduced to the grating necessity of forfeiting his independence, and of being obliged to the sparing hand of charity for support?

These considerations are calculated to prevent, and certainly do prevent, a great number of persons in all civilized nations from pursuing the dictate of nature in an early attachment to one woman.

If this restraint does not produce vice, it is undoubtedly the least evil that can arise from the principle of population. Considered as a restraint on a strong natural inclination, it must be allowed to produce a certain degree of temporary unhappiness, but evidently slight compared with the evils which result from any of the other checks to population, and merely of the same nature as many other sacrifices of temporary to permanent gratification, which it is the business of a moral agent continually to make.

When this restraint produces vice, the evils which follow are but too conspicuous. A promiscuous intercourse to such a degree as to prevent the birth of children seems to lower, in the most marked manner, the dignity of human nature. It cannot be without its effect on men, and nothing can be more obvious than its tendency to degrade the female character and to destroy all its most amiable and distinguishing characteristics. Add to which, that among those unfortunate females with which all great towns abound more real distress and aggravated misery are, perhaps, to be found, than in any other department of human life.

When a general corruption of morals with regard to the sex pervades all the classes of society, its effects must necessarily be to poison the springs of domestic happiness, to weaken conjugal and parental affection, and to lessen the united exertions

and ardor of parents in the care and education of their children, — effects which cannot take place without a decided diminution of the general happiness and virtue of the society; particularly as the necessity of art in the accomplishment and conduct of intrigues and in the concealment of their consequences necessarily leads to many other vices.

The positive checks to population are extremely various, and include every cause, whether arising from vice or misery, which in any degree contributes to shorten the natural duration of human life. Under this head, therefore, may be enumerated all unwholesome occupations, severe labor and exposure to the seasons, extreme poverty, bad nursing of children, great towns, excesses of all kinds, the whole train of common diseases and epidemics, wars, plague, and famine.

On examining these obstacles to the increase of population which I have classed under the heads of preventive and positive checks, it will appear that they are all resolvable into moral restraint, vice, and misery.

Of the preventive checks, the restraint from marriage which is not followed by irregular gratifications may properly be termed moral restraint.[1]

Promiscuous intercourse, unnatural passions, violations of the marriage bed, and improper arts to conceal the consequences of irregular connections are preventive checks that clearly come under the head of vice.

Of the positive checks, those which appear to arise unavoidably from the laws of nature may be called exclusively misery,

[1] It will be observed that I here use the term *moral* in its most confined sense. By moral restraint I would be understood to mean a restraint from marriage from prudential motives, with a conduct strictly moral during the period of this restraint; and I have never intentionally deviated from this sense. When I have wished to consider the restraint from marriage unconnected with its consequences, I have either called it prudential restraint, or a part of the preventive check, of which indeed it forms the principal branch. In my review of the different stages of society I have been accused of not allowing sufficient weight in the prevention of population to moral restraint; but when the confined sense of the term, which I have here explained, is adverted to, I am fearful that I shall not be found to have erred much in this respect. I should be very glad to believe myself mistaken.

and those which we obviously bring upon ourselves, such as wars, excesses, and many others which it would be in our power to avoid, are of a mixed nature. They are brought upon us by vice, and their consequences are misery.

The sum of all these preventive and positive checks taken together forms the immediate check to population; and it is evident that in every country where the whole of the procreative power cannot be called into action, the preventive and the positive checks must vary inversely as each other; that is, in countries either naturally unhealthy or subject to a great mortality, from whatever cause it may arise, the preventive check will prevail very little. In those countries, on the contrary, which are naturally healthy, and where the preventive check is found to prevail with considerable force, the positive check will prevail very little, or the mortality be very small.

In every country some of these checks are with more or less force in constant operation; yet, notwithstanding their general prevalence, there are few states in which there is not a constant effort in the population to increase beyond the means of subsistence. This constant effort as constantly tends to subject the lower classes of society to distress, and to prevent any great permanent melioration of their condition.

These effects, in the present state of society, seem to be produced in the following manner. We will suppose the means of subsistence in any country just equal to the easy support of its inhabitants. The constant effort towards population, which is found to act even in the most vicious societies, increases the number of people before the means of subsistence are increased. The food, therefore, which before supported eleven millions, must now be divided among eleven millions and a half. The poor consequently must live much worse, and many of them be reduced to severe distress. The number of laborers also being above the proportion of work in the market, the price of labor must tend to fall, while the price of provisions would at the same time tend to rise. The laborer, therefore, must do more work to earn the same as he did before. During this season of distress the discouragements to marriage and the difficulty of

rearing a family are so great that the progress of population is retarded. In the meantime the cheapness of labor, the plenty of laborers, and the necessity of an increased industry among them encourage cultivators to employ more labor upon their land, to turn up fresh soil, and to manure and improve more completely what is already in tillage, till ultimately the means of subsistence may become in the same proportion to the population as at the period from which we set out. The situation of the laborer being then again tolerably comfortable, the restraints to population are in some degree loosened ; and after a short period the same retrograde and progressive movements, with respect to happiness, are repeated.

This sort of oscillation will not probably be obvious to common view ; and it may be difficult even for the most attentive observer to calculate its periods. Yet that in the generality of old states some alternation of this kind does exist, though in a much less marked and in a much more irregular manner than I have described it, no reflecting man who considers the subject deeply can well doubt.

CHAPTER X

THE DIVISION OF LABOR

1. The Views of Adam Smith[1]

I

The greatest improvement in the productive powers of labour, and the greater skill, dexterity, and judgment with which it is anywhere directed or applied, seem to have been the effects of the division of labour.

The effects of the division of labour, in the general business of society, will be more easily understood, by considering in what manner it operates in some particular manufactures. It is commonly supposed to be carried furthest in some very trifling ones; not perhaps that it really is carried further in them than in others of more importance: but in those trifling manufactures which are destined to supply the small wants of but a small number of people, the whole number of workmen must necessarily be small; and those employed in every different branch of the work can often be collected into the same workshop, and placed at once under the view of the spectator. In those great manufactures, on the contrary, which are destined to supply the great wants of the great body of the people, every different branch of the work employs so great a number of workmen, that it is impossible to collect them all into the same workshop. We can seldom see more, at one time, than those employed in one single branch. Though, in such manufactures, the work may be divided into a greater number of parts, than in those of a more trifling nature, the division is not near so obvious, and has accordingly been much less observed.

[1] Wealth of Nations, Bk. I, chaps. i and iii.

To take an example, therefore, from a very trifling manufacture; but one in which the division of labour has been very often taken notice of, the trade of the pin-maker; a workman not educated to this business (which the division of labour has rendered a distinct trade), nor acquainted with the use of the machinery employed in it (to the invention of which the same division of labour has probably given occasion), could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty. But in the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head: to make the head requires two or three distinct operations; to put it on, is a peculiar business; to whiten the pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them. I have seen a small manufactory of this kind where ten men only were employed, and where some of them consequently performed two or three distinct operations. But though they were very poor, and therefore but indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day. There are in a pound upwards of four thousand pins of a middling size. Those ten persons, therefore, could make among them upwards of forty-eight thousand pins in a day. Each person, therefore, making a tenth-part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each of them have made twenty, perhaps not one pin in a day; that is, certainly, not the two hundred and fortieth, perhaps not the four

thousand eight hundredth part of what they are at present capable of performing, in consequence of a proper division and combination of their different operations.

In every other art and manufacture, the effects of the division of labour are similar to what they are in this very trifling one; though, in many of them, the labour can neither be so much subdivided, nor reduced to so great a simplicity of operation. The division of labour, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labour. The separation of different trades and employments from one another, seems to have taken place, in consequence of this advantage. This separation, too, is generally carried furthest in those countries which enjoy the highest degree of industry and improvement; what is the work of one man in a rude state of society, being generally that of several in an improved one. In every improved society, the farmer is generally nothing but a farmer; the manufacturer, nothing but a manufacturer. The labour, too, which is necessary to produce any one complete manufacture, is almost always divided among a great number of hands. How many different trades are employed in each branch of the linen and woollen manufactures, from the growers of the flax and the wool, to the bleachers and smoothers of the linen, or to the dyers and dressers of the cloth! The nature of agriculture, indeed, does not admit of so many subdivisions of labour, nor of so complete a separation of one business from another, as manufactures. It is impossible to separate so entirely the business of the grazier from that of the corn-farmer, as the trade of the carpenter is commonly separated from that of the smith. The spinner is almost always a distinct person from the weaver; but the ploughman, the harrower, the sower of the seed, and the reaper of the corn, are often the same. The occasions for those different sorts of labour returning with the different seasons of the year, it is impossible that one man should be constantly employed in any one of them. This impossibility of making so complete and entire a separation of all the different branches of labour employed in agriculture, is perhaps the reason why the improvement of the

productive powers of labour in this art does not always keep pace with their improvement in manufactures. The most opulent nations, indeed, generally excel all their neighbours in agriculture as well as in manufactures; but they are commonly more distinguished by their superiority in the latter than in the former.

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This great increase of the quantity of work, which, in consequence of the division of labour, the same number of people are capable of performing, is owing to three different circumstances: I. To the increase of dexterity in every particular workman; II. To the saving of the time which is commonly lost in passing from one species of work to another; III. To the invention of a great number of machines which facilitate and abridge labour, and enable one man to do the work of many.

I. The improvement of the dexterity of the workman necessarily increases the quantity of the work he can perform; and the division of labour, by reducing every man's business to some one simple operation, and by making this operation the sole employment of his life, necessarily increases very much the dexterity of the workman. A common smith, who, though accustomed to handle the hammer, has never been used to make nails, if upon some particular occasion he is obliged to attempt it, will scarce, I am assured, be able to make above two or three hundred in a day, and those, too, very bad ones. A smith who has been accustomed to make nails, but whose sole or principal business has not been that of a nailer, can seldom with his utmost diligence make more than eight hundred or a thousand nails in a day. I have seen several boys under twenty years of age who had never exercised any other trade but that of making nails, and who, when they exerted themselves, could make, each of them, upwards of two thousand three hundred nails in a day. The making of a nail, however, is by no means one of the simplest operations. The same person blows the bellows, stirs or mends the fire as there is occasion, heats the iron, and forges every part of the nail. In forging the head too he is obliged to change his tools. The different operations into which the making of a pin,

or of a metal button, is subdivided are all of them much more simple, and the dexterity of the person, of whose life it has been the sole business to perform them, is usually much greater. The rapidity with which some of the operations of those manufactures are performed, exceeds what the human hand could, by those who had never seen them, be supposed capable of acquiring.

II. The advantage which is gained by saving the time commonly lost in passing from one sort of work to another, is much greater than we should at first view be apt to imagine it. It is impossible to pass very quickly from one kind of work to another, that is carried on in a different place, and with quite different tools. A country weaver, who cultivates a small farm, must lose a good deal of time in passing from his loom to the field, and from the field to his loom. When the two trades can be carried on in the same workhouse, the loss of time is no doubt much less. It is even in this case, however, very considerable. A man commonly saunters a little in turning his hand from one sort of employment to another. When he first begins the new work he is seldom very keen and hearty; his mind, as they say, does not go it, and for some time he rather trifles than applies to good purpose. The habit of sauntering and of indolent careless application, which is naturally, or rather necessarily, acquired by every country workman who is obliged to change his work and his tools every half hour, and to apply his hand in twenty different ways almost every day of his life, renders him almost always slothful and lazy, and incapable of any vigorous application even on the most pressing occasions. Independent, therefore, of his deficiency in point of dexterity, this cause alone must always reduce considerably the quantity of work which he is capable of performing.

III. Everybody must be sensible how much labour is facilitated and abridged by the application of proper machinery. It is unnecessary to give any example. I shall only observe, therefore, that the invention of all those machines by which labour is so much facilitated and abridged, seems to have been originally owing to the division of labour. Men are much more likely to discover easier and readier methods of attaining any object,

when the whole attention of their minds is directed towards that single object, than when it is dissipated among a great variety of things. But in consequence of the division of labour, the whole of every man's attention comes naturally to be directed towards some one very simple object. It is naturally to be expected, therefore, that some one or other of those who are employed in each particular branch of labour should soon find out easier and readier methods of performing their own particular work, wherever the nature of it admits of such improvement. A great part of the machines made use of in those manufactures in which labour is most subdivided, were originally the inventions of common workmen, who being each of them employed in some very simple operation, naturally turned their thoughts towards finding out easier and readier methods of performing it. Whoever has been much accustomed to visit such manufactures, must frequently have been shown very pretty machines, which were the inventions of such workmen, in order to facilitate and quicken their own particular part of the work. In the first steam-engines, a boy was constantly employed to open and shut alternately the communication between the boiler and the cylinder, according as the piston either ascended or descended. One of those boys, who loved to play with his companions, observed that, by tying a string from the handle of the valve which opened this communication, to another part of the machine, the valve would open and shut without his assistance, and leave him at liberty to divert himself with his playfellows. One of the greatest improvements that has been made upon this machine, since it was first invented, was in this manner the discovery of a boy who wanted to save his own labour.[1]

All the improvements in machinery, however, have by no means been the inventions of those who had occasion to use the machines. Many improvements have been made by the ingenuity of the makers of the machines, when to make them became the business of a peculiar trade; and some by that of those who are called philosophers or men of speculation, whose trade it is not

[1] This story, unfortunately, seems to be largely mythical. See Cannon's edition of Wealth of Nations, I, 11, footnote. — Ed.

to do anything, but to observe everything ; and who, upon that account, are often capable of combining together the powers of the most distant and dissimilar objects. In the progress of society, philosophy or speculation becomes, like every other employment, the principal or sole trade and occupation of a particular class of citizens. Like every other employment too, it is subdivided into a great number of different branches, each of which affords occupation to a peculiar tribe or class of philosophers; and this subdivision of employment in philosophy, as well as in every other business, improves dexterity and saves time. Each individual becomes more expert in his own peculiar branch, more work is done upon the whole, and the quantity of science is considerably increased by it.

It is the great multiplication of the productions of all the different arts, in consequence of the division of labour, which occasions, in a well-governed society, that universal opulence which extends itself to the lowest ranks of the people. Every workman has a great quantity of his own work to dispose of beyond what he himself has occasion for; and every other workman being exactly in the same situation, he is enabled to exchange a great quantity of his own goods for a great quantity, or, what comes to the same thing, for the price of a great quantity of theirs. He supplies them abundantly with what they have occasion for, and they accommodate him as amply with what he has occasion for, and a general plenty diffuses itself through all the different ranks of the society.

Observe the accommodation of the most common artificer or day-labourer in a civilized and thriving country, and you will perceive that the number of people of whose industry a part, though but a small part, has been employed in procuring him this accommodation, exceeds all computation. The woollen coat, for example, which covers the day-labourer, as coarse and rough as it may appear, is the produce of the joint-labour of a great multitude of workmen. The shepherd, the sorter of the wool, the woolcomber or carder, the dyer, the scribbler, the spinner, the weaver, the fuller, the dresser, with many others, must all join their different arts in order to complete even this homely production.

How many merchants and carriers, besides, must have been employed in transporting the materials from some of those workmen to others who often live in a very distant part of the country! how much commerce and navigation in particular, how many ship-builders, sailors, sail-makers, rope-makers, must have been employed in order to bring together the different drugs made use of by the dyer, which often come from the remotest corners of the world! What a variety of labour too is necessary in order to produce the tools of the meanest of those workmen. To say nothing of such complicated machines as the ship of the sailor, the mill of the fuller, or even the loom of the weaver, let us consider only what a variety of labour is requisite in order to form that very simple machine, the shears with which the shepherd clips the wool. The miner, the builder of the furnace for smelting the ore, the feller of the timber, the burner of the charcoal to be made use of in the smelting-house, the brick-maker, the bricklayer, the workmen who attend the furnace, the mill-wright, the forger, the smith, must all of them join their different arts in order to produce them. Were we to examine, in the same manner, all the different parts of his dress and household furniture, the coarse linen shirt which he wears next his skin, the shoes which cover his feet, the bed which he lies on, and all the different parts which compose it, the kitchen grate at which he prepares his victuals, the coals which he makes use of for that purpose, dug from the bowels of the earth, and brought to him perhaps by a long sea and a long land-carriage, all the other utensils of his kitchen, all the furniture of his table, the knives and forks, the earthen or pewter plates upon which he serves up and divides his victuals, the different hands employed in preparing his bread and his beer, the glass window which lets in the heat and the light, and keeps out the wind and the rain, with all the knowledge and art requisite for preparing that beautiful and happy invention, without which these northern parts of the world could scarce have afforded a very comfortable habitation, together with the tools of all the different workmen employed in producing those different conveniences; if we examine, I say, all these things, and consider what a variety of labour is employed

about each of them, we shall be sensible that without the assistance and co-operation of many thousands, the very meanest person in a civilized country could not be provided, even according to, what we very falsely imagine, the easy and simple manner in which he is commonly accommodated. Compared, indeed, with the more extravagant luxury of the great, his accommodation must no doubt appear extremely simple and easy ; and yet it may be true, perhaps, that the accommodation of an European Prince does not always so much exceed that of an industrious and frugal peasant, as the accommodation of the latter exceeds that of many an African King, the absolute master of the lives and liberties of ten thousand naked savages.

III

As it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market.[1] When the market is very small, no person can have any encouragement to dedicate himself entirely to one employment, for want of the power to exchange all that surplus part of the produce of his own labour, which is over and above his own consumption, for such part of the produce of other men's labour as he has occasion for.

There are some sorts of industry, even of the lowest kind, which can be carried on nowhere but in a great town. A porter, for

[1] With this it is interesting to compare Xenophon's discussion of the advantages of division of labor (Cyropædia, VIII. 2) : "In small towns, the same man makes a couch, a door, a plow, and a table ; and frequently the same person is a builder, too, and is very well content if he can thus find customers enough to maintain him ; and it is impossible for a man who works at many things to do them all well ; but in great cities, because there are numbers that want each particular thing, one art alone suffices for the maintenance of each individual ; and frequently, indeed, not an entire art, but one man makes shoes for men, and another for women ; sometimes it happens that one gets a maintenance merely by stitching shoes, another by cutting them out, another by cutting out upper leathers only, and another by doing none of these things, but simply putting together the pieces. He, therefore, that is employed in a work of the smallest compass, must, of necessity, do it best."

example, can find employment and subsistence in no other place. A village is by much too narrow a sphere for him ; even an ordinary market town is scarce large enough to afford him constant occupation. In the lone houses and very small villages which are scattered about in so desert a country as the Highlands of Scotland, every farmer must be butcher, baker, and brewer for his own family. In such situations we can scarce expect to find even a smith, a carpenter, or a mason, within less than twenty miles of another of the same trade. The scattered families that live at eight or ten miles distance from the nearest of them, must learn to perform themselves a great number of little pieces of work, for which in more populous countries they would call in the assistance of those workmen. Country workmen are almost everywhere obliged to apply themselves to all the different branches of industry that have so much affinity to one another as to be employed about the same sort of materials. A country carpenter deals in every sort of work that is made of wood: a country smith in every sort of work that is made of iron. The former is not only a carpenter, but a joiner, a cabinet maker, and even a carver in wood, as well as a wheelwright, a ploughwright, a cart and waggon maker. The employments of the latter are still more various. It is impossible there should be such a trade as even that of a nailer in the remote and inland parts of the Highlands of Scotland. Such a workman, at the rate of a thousand nails a day, and three hundred working days in the year, will make 300,000 nails in the year. But in such a situation it would be impossible to dispose of 1,000, that is, of one day's work in the whole year.

As, by means of water-carriage, a more extensive market is open to every sort of industry than what land-carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself, and it is frequently not till a long time after that those improvements extend themselves to the inland parts of the country. A broad-wheeled waggon, attended by two men, and drawn by eight horses, in about six weeks' time carries and brings back between London and

Edinburgh near four ton weight of goods. In about the same time a ship navigated by six or eight men, and sailing between the ports of London and Leith, frequently carries and brings back two hundred ton weight of goods. Six or eight men, therefore, by help of water-carriage, can carry and bring back in the same time the same quantity of goods between London and Edinburgh, as fifty broad-wheeled waggons, attended by a hundred men, and drawn by four hundred horses. Upon two hundred tons of goods, therefore, carried by the cheapest land-carriage from London to Edinburgh, there must be charged the maintenance of a hundred men for three weeks, and both the maintenance, and, what is nearly equal to the maintenance, the wear and tear of four hundred horses as well as of fifty great waggons. Whereas, upon the same quantity of goods carried by water, there is to be charged only the maintenance of six or eight men, and the wear and tear of a ship of two hundred tons burthen, together with the value of the superior risk, or the difference of the insurance between land and water-carriage. Were there no other communication between those two places, therefore, but by land-carriage, as no goods could be transported from the one to the other, except such whose price was very considerable in proportion to their weight, they could carry on but a small part of that commerce which at present subsists between them, and consequently could give but a small part of that encouragement which they at present mutually afford to each other's industry. There could be little or no commerce of any kind between the distant parts of the world. What goods could bear the expense of land-carriage between London and Calcutta? Or if there were any so precious as to be able to support this expense, with what safety could they be transported through the territories of so many barbarous nations? Those two cities, however, at present carry on a very considerable commerce with each other, and by mutually affording a market, give a good deal of encouragement to each other's industry.

Since such therefore are the advantages of water-carriage, it is natural that the first improvements of art and industry should be made where this conveniency opens the whole world for a

market to the produce of every sort of labour, and that they should always be much later in extending themselves into the inland parts of the country. The inland parts of the country can for a long time have no other market for the greater part of their goods, but the country which lies round about them, and separates them from the sea-coast, and the great navigable rivers. The extent of their market therefore must for a long time be in proportion to the riches and populousness of that country, and consequently their improvement must always be posterior to the improvement of that country. In our North American colonies the plantations have constantly followed either the sea-coast or the banks of the navigable rivers, and have scarce anywhere extended themselves to any considerable distance from both.

2. A Criticism: By W. S. Jevons[1]

The third great advantage which Adam Smith attributes to the division of labor is the manner in which it causes labor to be facilitated and abridged by the application of proper machinery. In his opinion the invention of all those machines by which labor is so much facilitated and abridged seems to have been originally due to the division of labor. Men, he thinks, are much more likely to discover easier and readier methods of attaining any object when the whole attention of their minds is directed towards that single object than when it is dissipated among a great variety of things. The greater part of the machines made use of in those manufactures in which labor is most subdivided were, according to Smith, originally the inventions of common workmen, who, being each of them employed in some very simple operation, naturally turned their thoughts towards finding out easier and readier methods. The only instance, however, which he gives in support of this view is that of an engine boy who was employed as a cock boy to open and shut the cocks of an old Newcomen engine. This boy, named Humphrey Potter, is said to have attached a catch and strings in such a manner to the cocks and lever that the

[1] Principles of Economics, pp. 100–103.

cocks were opened and shut by the rise and fall of the beam. The engine thus became self-acting, — an improvement obviously of the greatest importance. Even supposing this story about Potter to be authentic, one instance does not prove a rule. Hundreds of thousands and millions of boys and men are constantly performing routine operations to which their attention is exclusively devoted, but how many in consequence make improvements? It would probably be possible to discover a certain number of inventions which actually have been made in this manner supposed by Adam Smith, and many more doubtless remain unrecorded and forgotten. It is also true that most of the great inventors were originally workingmen of obscure origin. Savery was a miner; Newcomen a blacksmith; his partner, Cawley, a glazier; Watt, a philosophical instrument maker; Arkwright, a barber; George Stephenson, a colliery engineman. . . . Of the other great inventors, such as Smeaton, Bramah, Roberts, Nasmyth, Bessemer, and the like, hardly one but was a self-made genius of humble origin. But the first great English inventor, William Lee, who invented the stocking frame, was a clergyman; Worcester, who first constructed a steam engine, was a nobleman, as also Stanhope, who improved the printing press. Then, again, it may be easily observed that there is little relation between the original trade of the great inventors and their subsequent inventions. In fact there hardly could be any fixed relation, because most of the great men named have made diverse improvements and new creations. Bramah's locks bear no relation to his hydraulic press or his ships' block-making machine. Bessemer is, of course, chiefly known for his great reform in steel making, but he has also made a series of other discoveries and inventions, such as dated stamps, patent gold powder, etc. James Watt, the greatest of all, had nothing to do with steam engines except to mend a model of one belonging to the Glasgow College, and the whole of his all-important improvements in the steam engine were the result of intentional study, elaborate experiment, and genius.

Without prolonging a discussion for which there is no sufficient space or purpose here, it may be safely said that Adam

Smith's view of the origin of inventions is mistaken. Nevertheless the division of labor has a large part in the matter, because in an elaborated and advancing state of industry it allows a man of ingenuity to adopt *the profession of an inventor*. It is indeed a hazardous profession, and one to which no man not impelled by the force of genius would be likely to devote himself. But there can be no question that men like Watt, Smeaton, Bramah, Bessemer, not to mention the still more recent names of Whitworth, Armstrong, Siemens, Edison, Bell, and the like, distinctly devote themselves to the labor of invention. The principles of machine construction are now, indeed, so well understood that self-acting machinery can now be designed almost *ad libitum* for the accomplishment of any ordinary work. The proprietors of large factories often employ an ingenious draughtsman in the capacity of inventor of machines. Of this class of machine designers Roberts, of Manchester, was the best example. It may be added that this view of the matter is clearly suggested by Mr. Smiles, whose admirable works contain most of what we know about the history of invention in this country.

It is also easy to see that the division of labor immensely assists invention, and is indeed the necessary condition of any considerable advance, by allowing the manufacturer to carry on a special kind of industry on a large scale, and surround himself with extensive special machinery and appliances. This point of the matter will be further considered below.

CHAPTER XI

THE ACCUMULATION OF CAPITAL: SAVING AND SPENDING

1. The Doctrine of Mill[1]

I

A second fundamental theorem respecting capital,[2] relates to the source from which it is derived. It is the result of saving. The evidence of this lies abundantly in what has been already said on the subject. But the proposition needs some further illustration.

If all persons were to expend in personal indulgences all that they produce, and all the income they receive from what is pro-

[1] Principles of Political Economy, Bk. I, chap. v.

[2] Mill had already defined capital as follows (Bk. I, chap. iv):

It has been seen in the preceding chapters that besides the primary and universal requisites of production, labor, and natural agents, there is another requisite without which no productive operations beyond the rude and scanty beginnings of primitive industry are possible: namely, a stock, previously accumulated, of the products of former labor. This accumulated stock of the produce of labor is termed Capital. The function of capital in production it is of the utmost importance thoroughly to understand, since a number of the erroneous notions with which our subject is infested originate in an imperfect and confused apprehension of this point.

Capital, by persons wholly unused to reflect on the subject, is supposed to be synonymous with money. To expose this misapprehension would be to repeat what has been said in the introductory chapter. Money is no more synonymous with capital than it is with wealth. Money cannot in itself perform any part of the office of capital, since it can afford no assistance to production. To do this it must be exchanged for other things; and anything which is susceptible of being exchanged for other things is capable of contributing to production in the same degree. What capital does for production is to afford the shelter, protection, tools, and materials which the work requires, and to feed and otherwise maintain the laborers during the process. These are the services which present labor requires from past, and from the produce of past, labor. Whatever things are destined for this use — destined to supply productive labor with these various prerequisites — are capital. — Ed.

duced by others, capital could not increase. All capital, with a trifling exception, was originally the result of saving. I say, with a trifling exception; because a person who labors on his own account may spend on his own account all he produces without becoming destitute; and the provision of necessaries on which he subsists until he has reaped his harvest, or sold his commodity, though a real capital, cannot be said to have been saved, since it is all used for the supply of his own wants, and perhaps as speedily as if it had been consumed in idleness. We may imagine a number of individuals or families settled on as many separate pieces of land, each living on what their own labor produces, and consuming the whole produce. But even these must save (that is, spare from their personal consumption) as much as is necessary for seed. Some saving, therefore, there must have been, even in this simplest of all states of economical relations; people must have produced more than they used, or used less than they produced. Still more must they do so before they can employ other laborers, or increase their production beyond what can be accomplished by the work of their own hands. All that any one employs in supporting and carrying on any other labor than his own, must have been originally brought together by saving; somebody must have produced it and forborne to consume it. We may say, therefore, without material inaccuracy, that all capital, and especially all addition to capital, are the result of saving.

In a rude and violent state of society it continually happens that the person who has capital is not the very person who has saved it, but some one who, being stronger, or belonging to a more powerful community, has possessed himself of it by plunder. And even in a state of things in which property was protected, the increase of capital has usually been, for a long time, mainly derived from privations which, though essentially the same with saving, are not generally called by that name because not voluntary. The actual producers have been slaves, compelled to produce as much as force could extort from them, and to consume as little as the self-interest or the usually very

slender humanity of their taskmasters would permit. This kind of compulsory saving, however, would not have caused any increase of capital, unless a part of the amount had been saved over again, voluntarily, by the master. If all that he made his slaves produce and forbear to consume had been consumed by him on personal indulgences, he would not have increased his capital, nor been enabled to maintain an increasing number of slaves. To maintain any slaves at all implied a previous saving; a stock, at least of food, provided in advance. This saving may not, however, have been made by any self-imposed privation of the master, but more probably by that of the slaves themselves while free; the rapine or war, which deprived them of their personal liberty, having transferred also their accumulations to the conqueror.

There are other cases in which the term saving, with the associations usually belonging to it, does not exactly fit the operation by which capital is increased. If it were said, for instance, that the only way to accelerate the increase of capital is by increase of saving, the idea would probably be suggested of greater abstinence and increased privation. But it is obvious that whatever increases the productive power of labor creates an additional fund to make savings from, and enables capital to be enlarged not only without additional privation, but concurrently with an increase of personal consumption. Nevertheless there is here an increase of saving, in the scientific sense. Though there is more consumed, there is also more spared. There is a greater excess of production over consumption. It is consistent with correctness to call this a greater saving. Though the term is not unobjectionable, there is no other which is not liable to as great objections. To consume less than is produced is saving; and that is the process by which capital is increased; not necessarily by consuming less, absolutely. We must not allow ourselves to be so much the slaves of words as to be unable to use the word "saving" in this sense, without being in danger of forgetting that to increase capital there is another way besides consuming less, — namely, to produce more.

II

A third fundamental theorem respecting capital closely connected with the one last discussed is, that although saved, and the result of saving, it is nevertheless consumed. The word "saving" does not imply that what is saved is not consumed, nor even necessarily that its consumption is deferred; but only that, if consumed immediately, it is not consumed by the person who saves it. If merely laid by for future use it is said to be hoarded; and while hoarded, is not consumed at all. But if employed as capital, it is all consumed, though not by the capitalist. Part is exchanged for tools or machinery which are worn out by use; part for seed or materials which are destroyed as such by being sown or wrought up, and destroyed altogether by the consumption of the ultimate product. The remainder is paid in wages to productive laborers, who consume it for their daily wants; or if they in their turn save any part, this also is not, generally speaking, hoarded, but (through savings banks, benefit clubs, or some other channel) reëmployed as capital, and consumed.

The principle now stated is a strong example of the necessity of attention to the most elementary truths of our subject; for it is one of the most elementary of them all, and yet no one who has not bestowed some thought on the matter is habitually aware of it, and most are not even willing to admit it when first stated. To the vulgar it is not at all apparent that what is saved is consumed. To them every one who saves appears in the light of a person who hoards; they may think such conduct permissible, or even laudable, when it is to provide for a family, and the like, but they have no conception of it as doing good to other people; saving is to them another word for keeping a thing to oneself, while spending appears to them to be distributing it among others. The person who expends his fortune in unproductive consumption is looked upon as diffusing benefits all around, and is an object of so much favor that some portion of the same popularity attaches even to him who spends what does not belong to him, — who not only destroys his own capital, if he ever had any, but, under pretense of borrowing

and on promise of repayment, possesses himself of capital belonging to others, and destroys that likewise.

This popular error comes from attending to a small portion only of the consequences that flow from the saving or the spending; all the effects of either which are out of sight, being out of mind. The eye follows what is saved into an imaginary strong box, and there loses sight of it; what is spent it follows into the hands of tradespeople and dependents, but without reaching the ultimate destination in either case. Saving (for productive investment) and spending coincide very closely in the first stage of their operations. The effects of both begin with consumption, — with the destruction of a certain portion of wealth; only the things consumed and the persons consuming are different. There is, in the one case, a wearing out of tools, a destruction of material, and a quantity of food and clothing supplied to laborers which they destroy by use; in the other case, there is a consumption, that is to say, a destruction, of wines, equipages, and furniture. Thus far the consequence to the national wealth has been much the same; an equivalent quantity of it has been destroyed in both cases. But in the spending, this first stage is also the final stage; that particular amount of the produce of labor has disappeared, and there is nothing left; while, on the contrary, the saving person, during the whole time that the destruction was going on, has had laborers at work repairing it who are ultimately found to have replaced, with an increase, the equivalent of what has been consumed. And as this operation admits of being repeated indefinitely without any fresh act of saving, a saving once made becomes a fund to maintain a corresponding number of laborers in perpetuity, reproducing annually their own maintenance with a profit.

It is the intervention of money which obscures, to an unpracticed apprehension, the true character of these phenomena. Almost all expenditure being carried on by means of money, the money comes to be looked upon as the main feature in the transaction; and since that does not perish, but only changes hands, people overlook the destruction which takes place in the

case of unproductive expenditure. The money being merely transferred, they think the wealth also has only been handed over from the spendthrift to other people. But this is simply confounding money with wealth. The wealth which has been destroyed was not the money, but the wines, equipages, and furniture which the money purchased; and these having been destroyed without return, society collectively is poorer by the amount. It may be said, perhaps, that wines, equipages, and furniture are not subsistence, tools, and materials, and could not in any case have been applied to the support of labor; that they are adapted for no other than unproductive consumption, and that the detriment to the wealth of the community was when they were produced, not when they were consumed. I am willing to allow this, as far as is necessary for the argument, and the remark would be very pertinent if these expensive luxuries were drawn from an existing stock, never to be replenished. But since, on the contrary, they continue to be produced as long as there are consumers for them, and are produced in increased quantity to meet an increased demand, the choice made by a consumer to expend five thousand a year in luxuries keeps a corresponding number of laborers employed from year to year in producing things which can be of no use to production, their services being lost so far as regards the increase of the national wealth, and the tools, materials, and food which they annually consume being so much subtracted from the general stock of the community applicable to productive purposes. In proportion as any class is improvident or luxurious, the industry of the country takes the direction of producing luxuries for their use; while not only the employment for productive laborers is diminished, but the subsistence and instruments which are the means of such employment do actually exist in smaller quantity.

Saving, in short, enriches, and spending impoverishes the community along with the individual; which is but saying in other words, that society at large is richer by what it expends in maintaining and aiding productive labor, but poorer by what it consumes in its enjoyments.

2. The Seen and the Unseen[1]

In the department of economy, an act, a habit, an institution, a law, gives birth not only to an effect, but to a series of effects. Of these effects the first one is immediate; it manifests itself simultaneously with its cause, — *it is seen.* The others unfold in succession, — *they are not seen;* it is well for us, if they are *foreseen.* Between a good and a bad economist this constitutes the whole difference, — the one takes account of the *visible* effect; the other takes account both of the effects which are *seen*, and also of those which it is necessary to *foresee.* Now this difference is enormous, for it almost always happens that when the immediate consequence is favorable the ultimate consequences are fatal, *and the converse.* Hence it follows that the bad economist pursues a small present good which will be followed by a great evil to come, while the true economist pursues a great good to come, at the risk of a small present evil.

In fact it is the same in the science of health, arts, and in that of morals. It often happens that the sweeter the first fruit of a habit is, the more bitter are the consequences. Take, for example, debauchery, idleness, prodigality. When, therefore, a man, absorbed in the effect which *is seen*, has not yet learned to discern those which are *not seen*, he gives way to fatal habits, not only by inclination, but by calculation.

This explains the fatally grievous condition of mankind. Ignorance surrounds its cradle; then its actions are determined by their first consequences, the only ones which, in its first stage, it can see. It is only in the long run that it learns to take account of the others. It has to learn this lesson from two very different masters, — experience and foresight. Experience teaches effectually, but brutally. It makes us acquainted with all the effects of an action by causing us to feel them; and we cannot fail to finish by knowing that fire burns if we have burned ourselves. For this rough teacher, I should like, if possible, to substitute a more gentle one. I mean foresight. For

[1] From Essays in Political Economy, by Frederic Bastiat (1801–1850).

this purpose I shall examine the consequences of certain economical phenomena, by placing in opposition to each other those *which are seen*, and those *which are not seen.*

I. The Broken Window

Have you ever witnessed the anger of the good shopkeeper, James B., when his careless son happened to break a square of glass? If you have been present at such a scene you will most assuredly bear witness to the fact that every one of the spectators, were there even thirty of them, by common consent apparently, offered the unfortunate owner this invariable consolation: "It is an ill wind that blows nobody good. Everybody must live, and what would become of the glaziers if panes of glass were never broken?"

Now this form of condolence contains an entire theory, which it will be well to show up in this simple case, seeing that it is precisely the same as that which, unhappily, regulates the greater part of our economical institutions.

Suppose it cost six francs to repair the damage, and you say that the accident brings six francs to the glazier's trade, — that it encourages that trade to the amount of six francs, — I grant it; I have not a word to say against it; you reason justly. The glazier comes, performs his task, receives his six francs, rubs his hands, and, in his heart, blesses the careless child. All this is *that which is seen.*

But if, on the other hand, you come to the conclusion, as is too often the case, that it is a good thing to break windows, that it causes money to circulate, and that the encouragement of industry in general will be the result of it, you will oblige me to call out, "Stop there! your theory is confined to that *which is seen;* it takes no account of that *which is not seen.*"

It is not seen that as our shopkeeper has spent six francs upon one thing, he cannot spend them upon another. *It is not seen* that if he had not had a window to replace, he would, perhaps, have replaced his old shoes, or added another book to his library.

In short, he would have employed his six francs in some way which this accident has prevented.

Let us take a view of industry in general, as affected by this circumstance. The window being broken, the glazier's trade is encouraged to the amount of six francs ; *this is that which is seen.*

If the window had not been broken, the shoemaker's trade (or some other) would have been encouraged to the amount of six francs ; *this is that which is not seen.*

And if *that which is not seen* is taken into consideration, because it is a negative fact, as well as that which is seen, because it is a positive fact, it will be understood that neither industry *in general*, nor the sum total of *national labor* is affected, whether windows are broken or not.

Now let us consider James B. himself. In the former supposition, that of the window being broken, he spends six francs, and has neither more nor less than he had before, — the enjoyment of a window.

In the second, where we suppose the window not to have been broken, he would have spent six francs in shoes, and would have had at the same time the enjoyment of a pair of shoes and a window.

Now as James B. forms a part of society, we must come to the conclusion that, taking it altogether, and making an estimate of its enjoyments and its labors, it has lost the value of the broken window.

Whence we arrive at this unexpected conclusion, "Society loses the value of things which are uselessly destroyed" ; and we must assent to a maxim which will make the hair of protectionists stand on end, — To break, to spoil, to waste, is not to encourage national labor ; or, more briefly, "destruction is not profit."

What will you say, *Moniteur Industriel* — what will you say, disciples of good Mr. Chamans, who has calculated with so much precision how much trade would gain by the burning of Paris, from the number of houses it would be necessary to rebuild?

I am sorry to disturb these ingenious calculations, as far as their spirit has been introduced into our legislation ; but I beg

him to begin them again by taking into the account *that which is not seen*, and placing it alongside of *that which is seen.*

The reader must take care to remember that there are not two persons only, but three, concerned in the little scene which I have submitted to his attention. One of them, James B., represents the consumer, reduced by an act of destruction to one enjoyment instead of two. Another, under the title of the glazier, shows the producer, whose trade is encouraged by the accident. The third is the shoemaker (or some other tradesman), whose labor suffers proportionably by the same cause. It is this third person who is always kept in the shade, and who, personating *that which is not seen*, is a necessary element of the problem. It is he who shows us how absurd it is to think we see a profit in an act of destruction. It is he who will soon teach us that it is not less absurd to see a profit in a restriction, which is, after all, nothing else than a partial destruction. Therefore, if you will only go to the root of all the arguments which are adduced in its favor, all you will find will be the paraphrase of this vulgar saying, *What would become of the glaziers if nobody ever broke windows?*

V. Public Works

Nothing is more natural than that a nation, after having assured itself that an enterprise will benefit a community, should have it executed by means of a general assessment. But I lose patience, I confess, when I hear this economic blunder advanced in support of such a project, — "Besides it will be a means of creating labor for the workmen."

The State opens a road, builds a palace, straightens a street, cuts a canal ; and so gives work to certain workmen — *this is what is seen ;* but it deprives certain other workmen of work, and this is what *is not seen.*

The road is begun. A thousand workmen come every morning, leave every evening, and take their wages ; this is certain. If the road had not been decreed, if the supplies had not been voted, these good people would have had neither work nor salary there ; this also is certain.

But is this all? Does not the operation, as a whole, contain something else? At the moment when Mr. Dupin announces the emphatic words, "The Assembly has adopted," do the millions descend miraculously on a moonbeam into the coffers of Messrs. Fould and Bineau? In order that the operation may be complete, as it is said, must not the State organize the receipts as well as the expenditure? Must it not set its tax-gatherers and taxpayers to work, the former to gather, and the latter to pay?

Study the question now in both its elements. While you state the destination given by the State to the millions voted, do not neglect to state also the destination which the taxpayer would have given, but cannot now give, to the same. Then you will understand that a public enterprise is a coin with two sides. Upon one is engraved a laborer out of work, with the device, *that which is not seen.*

The sophism which this work is intended to refute is the more dangerous when applied to public works, inasmuch as it serves to justify the most wanton enterprises and extravagance. When a railroad or a bridge are of real utility, it is sufficient to mention this utility. But if it does not exist, what do they do? Recourse is had to this mystification, "We must find work for the workmen."

Accordingly, orders are given that the drains in the Champ-de-Mars be made and unmade. The great Napoleon, it is said, thought he was doing a very philanthropic work by causing ditches to be made and then filled up. He said, therefore: "What signifies the result? All we want is to see wealth spread among the laboring classes."

But let us go to the root of the matter. We are deceived by money. To demand the coöperation of all the citizens in a common work, in the form of money, is in reality to demand a concurrence in kind; for every one procures, by his own labor, the sum which he is taxed. Now if all the citizens were to be called together, and made to execute, in conjunction, a work useful to all, this would be easily understood; their reward would be found in the results of the work itself.

But after having called them together, if you force them to make roads which no one will pass through, palaces which no one will inhabit, and this under the pretext of finding them work, it would be absurd, and they would have a right to argue, "With this labor we will have nothing to do; we prefer working on our own account."

A proceeding which consists in making the citizens coöperate in giving money but not labor, does not, in any way, alter the general results. The only thing is, that the loss would react upon all parties. By the former, those whom the State employs escape their part of the loss by adding it to that which their fellow-citizens have already suffered.

There is an article in our constitution which says: "Society favors and encourages the development of labor — by the establishment of public works, by the State, the departments, and the parishes, as a means of employing persons who are in want of work."

As a temporary measure, on any emergency, during a hard winter, this interference with the taxpayers may have its use. It acts in the same way as securities. It adds nothing either to labor or to wages, but it takes labor and wages from ordinary times to give them, at a loss it is true, to times of difficulty.

As a permanent, general, systematic measure, it is nothing else than a ruinous mystification, an impossibility, which shows a little excited labor *which is seen*, and hides a great deal of prevented labor *which is not seen.*

XI. Frugality and Luxury

It is not only in the public expenditure that *what is seen* eclipses *what is not seen.* Setting aside what relates to political economy, this phenomenon leads to false reasoning. It causes nations to consider their moral and their material interests as contradictory to each other. What can be more discouraging or more dismal?

For instance, there is not a father of a family who does not think it his duty to teach his children order, system, the habits of carefulness, of economy, and of moderation in spending money.

There is no religion which does not thunder against pomp and luxury. This is as it should be; but, on the other hand, how frequently do we hear the following remarks:

"To hoard is to drain the veins of the people."

"The luxury of the great is the comfort of the little."

"Prodigals ruin themselves, but they enrich the State."

"It is the superfluity of the rich which makes the bread of the poor."

Here, certainly, is a striking contradiction between the moral and the social idea. How many eminent spirits, after having made the assertion, repose in peace. It is a thing I could never understand, for it seems to me that nothing can be more distressing than to discover two opposite tendencies in mankind. Why, it comes to degradation at each of the extremes: economy brings it to misery; prodigality plunges it into moral degradation. Happily these vulgar maxims exhibit economy and luxury in a false light, taking account, as they do, of those immediate consequences *which are seen*, and not of the remote ones, *which are not seen*. Let us see if we can rectify this incomplete view of the case.

Mondor and his brother Aristus, after dividing the paternal inheritance, have each an income of fifty thousand francs. Mondor practices the fashionable philanthropy. He is what is called a squanderer of money. He renews his furniture several times a year; changes his equipages every month. People talk of his ingenious contrivances to bring them sooner to an end; in short, he surpasses the fast livers of Balzac and Alexandre Dumas.

Thus everybody is singing his praises. It is: "Tell us about Mondor! Mondor forever! He is the benefactor of the workman; a blessing to the people. It is true, he revels in dissipation; he splashes the passers-by; his own dignity and that of human nature are lowered a little; but what of that? He does good with his fortune, if not with himself. He causes money to circulate; he always sends the tradespeople away satisfied. Is not money made round that it may roll?"

Aristus has adopted a very different plan of life. If he is not an egotist, he is, at any rate, an *individualist*, for he considers

expense, seeks only moderate and reasonable enjoyments, thinks of his children's prospects, and, in fact, he economizes.

And what do people say of him? "What is the good of a rich fellow like him? He is a skinflint. There is something imposing, perhaps, in the simplicity of his life; and he is humane, too, and benevolent, and generous, but he *calculates*. He does not spend his income; his house is neither brilliant nor bustling. What good does he do to the paper hangers, the carriage makers, the horse dealers, and the confectioners?"

These opinions, which are fatal to morality, are founded upon what strikes the eye, — the expenditure of the prodigal; and another, which is out of sight, the equal and even superior expenditure of the economist.

But things have been so admirably arranged by the Divine Inventor of social order, that in this, as in everything else, political economy and morality, far from clashing, agree; and the wisdom of Aristus is not only more dignified, but still more profitable, than the folly of Mondor. And when I say profitable, I do not mean only profitable to Aristus, or even to society in general, but more profitable to the workmen themselves, — to the trade of the time.

To prove it, it is only necessary to turn the mind's eye to those hidden consequences of human actions which the bodily eye does not see.

Yes, the prodigality of Mondor has visible effects in every point of view. Everybody can see his landaus, his phaetons, his berlins, the delicate paintings on his ceilings, his rich carpets, the brilliant effects of his house. Every one knows that his horses run upon the turf. The dinners which he gives at the Hôtel de Paris attract the attention of the crowds upon the boulevards; and it is said, "That is a generous man; far from saving his income, he is very likely breaking into his capital." This is *what is seen.*

It is not so easy to see, with regard to the interest of workers, what becomes of the income of Aristus. If we were to trace it carefully, however, we should see that the whole of it, down to the last farthing, affords work to the laborers as certainly as the

fortune of Mondor. Only there is this difference : the wanton extravagance of Mondor is doomed to be constantly decreasing, and to come to an end without fail ; while the wise expenditure of Aristus will go on increasing from year to year. And if this is the case, then most assuredly the public interest will be in unison with morality.

Aristus spends upon himself and his family 20,000 francs a year. If that is not sufficient to content him, he does not deserve to be called a wise man. He is touched by the miseries which oppress the poorer classes ; he thinks he is bound in conscience to afford them some relief, and therefore he devotes 10,000 francs to acts of benevolence. Amongst the merchants, the manufacturers, and the agriculturists, he has friends who are suffering under temporary difficulties ; he makes himself acquainted with their situation that he may assist them with prudence and efficiency, and to this work he devotes 10,000 francs more. Then he does not forget that he has daughters to portion, and sons for whose prospects it is his duty to provide, and therefore he considers it a duty to lay by and put out to interest 10,000 francs every year.

The following is a list of his expenses :

1. Personal expenses	20,000 fr.
2. Benevolent objects	10,000 "
3. Offices of friendship	10,000 "
4. Saving	10,000 "

Let us examine each of these items, and we shall see that not a single farthing escapes the national labor.

1. *Personal expenses.* These, as far as workpeople and tradesmen are concerned, have precisely the same effect as an equal sum spent by Mondor. This is self-evident ; therefore we shall say no more about it.

2. *Benevolent objects.* The 10,000 francs devoted to this purpose benefit trade in an equal degree ; they reach the butcher, the baker, the tailor, and the carpenter. The only thing is, that the bread, the meat, and the clothing are not used by Aristus, but by those whom he has made his substitutes. Now this simple

substitution of one consumer for another in no way affects trade in general. It is all one, whether Aristus spends a crown, or desires some unfortunate person to spend it instead.

3. *Offices of friendship.* The friend to whom Aristus lends or gives 10,000 francs does not receive them to bury them; that would be against the hypothesis. He uses them to pay for goods, or to discharge debts. In the first place, trade is encouraged. Will any one pretend to say that it gains more by Mondor's purchase of a thoroughbred horse for 10,000 francs, than by the purchase of 10,000 francs' worth of stuffs by Aristus or his friend? For, if this sum serves to pay a debt, a third person appears, viz. the creditor, who will certainly employ them upon something in his trade, his household, or his farm. He forms another medium between Aristus and the workmen. The names only are changed; the expense remains, and also the encouragement to trade.

4. *Saving.* There remain now the 10,000 francs saved; and it is here, as regards the encouragement to the arts, to trade, labor, and the workmen, that Mondor appears far superior to Aristus, although in a moral point of view, Aristus shows himself in some degree superior to Mondor.

I can never look at these apparent contradictions between the great laws of nature without a feeling of physical uneasiness which amounts to suffering. Were mankind reduced to the necessity of choosing between two parties, one of whom injures his interest, and the other his conscience, we should have nothing to hope from the future. Happily this is not the case; and to see Aristus regain his economical superiority, as well as his moral superiority, it is sufficient to understand this consoling maxim, which is no less true from having a paradoxical appearance, "To save is to spend."

What is Aristus's object in saving 10,000 francs? Is it to bury them in his garden? No, certainly; he intends to increase his capital and his income; consequently this money, instead of being employed upon his own personal gratification, is used for buying land, a house, etc., or it is placed in the hands of a merchant or a banker. Follow the progress of this money in any

one of these cases, and you will be convinced that through the medium of vendors or lenders it is encouraging labor quite as certainly as if Aristus, following the example of his brother, had exchanged it for furniture, jewels, and horses.

For when Aristus buys lands or *rentes* for 10,000 francs, he is determined by the consideration that he does not want to spend this money. This is why you complain of him.

But, at the same time, the man who sells the land or the *rente*, is determined by the consideration that he does want to spend the 10,000 francs in some way ; so that the money is spent in any case, either by Aristus, or by others in his stead.

With respect to the working class, to the encouragement of labor, there is only one difference between the conduct of Aristus and that of Mondor. Mondor spends the money himself, and around him, and therefore the effect *is seen*. Aristus, spending it partly through immediate parties, and at a distance, the effect *is not seen*. But, in fact, those who know how to attribute effects to their proper causes will perceive that *what is not seen* is as certain as *what is seen*. This is proved by the fact that in both cases the money circulates, and does not lie in the iron chest of the wise man, any more than it does in that of the spendthrift. It is, therefore, false to say that economy does actual harm to trade ; as described above, it is equally beneficial with luxury.

But how far superior is it, if, instead of confining our thoughts to the present moment, we let them embrace a longer period !

Ten years pass away. What is become of Mondor and his fortune, and his great popularity ? Mondor is ruined. Instead of spending 60,000 francs every year in the social body, he is, perhaps, a burden to it. In any case, he is no longer the delight of shopkeepers ; he is no longer the patron of the arts and of trade ; he is no longer of any use to the workmen, nor are his successors, whom he has brought to want.

At the end of the same ten years Aristus not only continues to throw his income into circulation, but he adds an increasing sum from year to year to his expenses. He enlarges the national capital, that is, the fund which supplies wages, and as it is upon the extent of this fund that the demand for hands depends, he

assists in progressively increasing the remuneration of the working class; and if he dies, he leaves children whom he has taught to succeed him in this work of progress and civilization.

In a moral point of view the superiority of frugality over luxury is indisputable. It is consoling to think that it is so in political economy, to every one who, not confining his views to the immediate effects of phenomena, knows how to extend his investigations to their final effects.

3. Criticism of the Doctrine of Saving[1]

The process of saving has received but scant attention from economic writers. Jevons appears to have held that superfluous food and other necessary consumptive goods, in whosesoever hands they were, constituted the only true fund of capital in a community at any given time. Sidgwick also holds that all savings are in the first instance food. That this is not the case will appear from the following example: A self-sufficing man produces daily for his daily consumption a quantity of food, etc., denoted by the figure 10. Five of this is necessary and 5 superfluous consumption. This man, working with primitive tools, discovers an implement which will greatly facilitate his production, but will cost 4 days' labor to make. Three alternatives are open to him. He may spend half his working day in producing the strictly necessary part of his previous consumption, 5, and devote the other half to making the new implement, which will be finished in 8 days. Or he may increase the duration of his working day by one quarter, giving the extra time to the making of his new implement, which will be finished in 16 days. Or lastly, he may continue to produce consumptive goods as before, but only consume half of them, preserving the other half for 8 days, until he has a fund which will suffice to keep him for 4 continuous days, which he will devote to making the new implement. If he adopts the first alternative, he simply changes

[1] By John A. Hobson. Reprinted, with the consent of the publisher, from Hobson's Evolution of Modern Capitalism, pp. 185–190. In the Contemporary Science Series, published by the Walter Scott Company [London, 1894].

the character of his production, producing in part of his working day future goods instead of present consumptive goods. In the second he creates future goods by extra labor. In the third case only does the saving or new capital take as its first shape food. In the same way a community seeking to introduce a more "roundabout" method of production requiring new plant, or seeking to place in the field of industry a new series of productive processes to satisfy some new want, may achieve their object by saving food, etc., or by changing for awhile the character of their production, or by extra labor. Thus new capital, whether from the individual or the community point of view, may take either food or any other material form as its first shape.

Since savings need not take the shape of food or any article capable of immediate consumption, Adam Smith and J. S. Mill are clearly wrong when they urge in terms almost identical[1] that what is saved is necessarily consumed, and consumed as quickly as that which is spent. The antithesis of saving and spending shows these writers, and the bulk of English economists who follow them, are misled, because they regard saving as doing something with money, and do not sufficiently go behind the financial aspect of putting money into a bank.

A closer analysis of saving yields the result that, except in one of the simple cases taken in our example above, where saving implied withholding consumable goods from present consumption, every act of saving in a complex industrial society signifies making, or causing to be made, forms of capital which are essentially incapable of present consumption — i.e. future or productive goods.

Each member of an industrial community receives his money income as the market equivalent of value created in goods or services by the requisites of production, land, capital, labor, which he owns. For every pound paid as income an equivalent quantity of material or nonmaterial wealth has been already created.

[1] "What is annually saved is as regularly consumed as what is annually spent, and nearly in the same time too; but it is consumed by a different set of people." —Wealth of Nations, p. 149 *b* (McCulloch). "Everything which is produced is consumed; both what is saved and what is said to be spent, and the former quite as quickly as the latter." — Principles of Political Economy, Book I, chap. v, sect. 6.

Let A be the owner of a requisite of production, receiving £500 a year as income in weekly payments of £10. Before receiving each £10 he has caused to come into existence an amount of wealth which, if material goods, may or may not be still in existence ; if services, has already been consumed. It is evident that A may each week consume £10 worth of goods and services without affecting the general condition of public wealth. A, however, determines to consume only £5 worth of goods and services each week, and puts the other £5 into the bank. Now what becomes of the £5 worth of goods and services which A might have consumed, but refused to consume? Do they necessarily continue to exist so long as A is credited with the money which represents their saving; if so, in what form? In other words, what actually takes place in the world of commerce when money income is said to be saved, what other industrial facts stand behind the financial fact of A depositing part of his income in the bank as savings?

To this question several answers are possible.

1. B, a spendthrift owner of land or capital, wishing to live beyond his income, may borrow from the bank each £5 which A puts in, mortgaging his property. In this case B spends what A might have spent; B's property (former savings perhaps?) falls into A's hands. A has individually effected a saving represented by tangible property, but as regards the community there is no saving at all, real or apparent.

2. C, a fraudulent promoter of companies, may by misrepresentation get hold of A's saved money, and may spend it for his own enjoyment, consuming the goods and services which A might have consumed, and giving to A "paper" stock which figures as A's savings. Here A has individually effected no saving.

From the point of view of the community there is no real saving (C has consumed instead of A), but so long as the "stock" has a market value there is an apparent saving. To this category belongs the savings effected if A lends his money to a government to be spent on war. From the standpoint of the community there is no saving (unless the war be supposed to yield an asset of wealth or security), but A's paper stock

represents his individual saving. A's saving is exactly balanced by the spending of the community in its corporate capacity, A receiving a mortgage upon the property of the community.[1]

3. D and E, manufacturers or traders, engaged in producing luxuries which A used to buy with his £5 before he took to saving, finding their weekly "takings" diminished and being reduced to financial straits, borrow A's savings in order to continue their business operations, mortgaging their plant and stock to A. So long as, with the assistance of A's money, they are enabled to continue producing, what they produce is oversupply, not needed to supply current consumption, assuming the relation between spending and saving in the other members of the community remains unaltered. This oversupply is the material representative of A's savings. So far as real capital is concerned there is no increase by A's act of saving; rather a decrease, for along with the net reduction in the consumption of luxuries on the part of the community due to A's action, there must be a fall in the value of the capital engaged in the various processes of producing luxuries, uncompensated by any other growth of values. But by A's saving, new forms of capital exist which bear the appearance of capital, though in reality they are "oversupply." These empty forms represent A's saving. Of course A, with full knowledge of the facts, would only lend to D and E up to the real value of their mortgaged capital. When this point was reached D and E could get no further advances, and their stock and plant would pass into A's hands. From the point of view of the community A's action has resulted in the creation of a number of material forms of capital which, so long as the existing relations between the community's production and consumption continue, stand as oversupply.

4. A may hand over his weekly £5 to F on security. F by purchase obtains the goods which A refused to consume, and may use them (or their equivalent in other material forms) as capital for further production. If F can with this capital help to produce articles for which there is an increasing consumption, or

[1] An able analysis of the nature of "paper savings" is found in J. M. Robertson, Fallacy of Saving (Sonnenschein).

articles which evoke and satisfy some new want, then A's action will have resulted in saving from the point of view of the community, — i.e. there will be an increase of real capital; forms of capital which would otherwise have figured as oversupply have the breath of economic life put into them by an increase in general consumption. No real difficulty arises from a doubt whether the goods and services which A renounced were capable of becoming effective capital. The things he renounced were luxurious consumptive goods and services. But he could change them into effective capital in the following way: Designing henceforth to consume only half his income, he would deliberately employ half the requisites of production which furnished his income in putting extra plant, machinery, etc., into some trade. Whether he does this himself, or incites F to do it, makes no difference; it will be done. In this way, by establishing new forms of useful capital, A can make good his saving, assuming an increase of general consumption. These are the four possible effects of A's saving from the point of view of the community:

1. Nil.
2. Bogus or "paper" saving.
3. Over-supply of forms of capital.
4. Increase of real capital.

It appears then that every act which in a modern industrial society is saving, from the standpoint of the community, and not a mere transfer of "spending" from one person to another, consists in the production of a form of goods in its nature or position incapable of present consumption.

This analysis of saving convicts J. S. Mill of a double error in saying, "Everything which is produced is consumed; both what is saved and what is said to be spent; and the former quite as rapidly as the latter." In the first place, by showing that saving from the point of view of the community generally means producing something incapable of present consumption, it proves that even if what is saved is consumed, it is not consumed as quickly as what is spent. Mill seemed to think that what was saved was necessarily food, clothing, and so-called finished goods, because saving to him was not a process, but a single negative

act of refusing to buy. Because a man who has saved has command of an extra stock of food, etc., which he may hand over to laborers as real wages, he seems to think that a community which saves will have its savings in this form. We see this is not the case. Even where in a primitive society extra food is the first form savings may take, it belongs to the act of saving that this food shall not be consumed so soon as it was available for consumption. In short, Mill's notion was that savings must necessarily mean a storing up of more food, clothing, etc., which, after all, is not stored, but is handed over to others to consume. He fails to perceive that a person who saves from the social as opposed to the individual point of view necessarily produces something which neither he nor any one else consumes at once — i.e. steam engines, pieces of leather, shop goods. A saving which is merely a transfer of spending from A to B is obviously no saving from the point of view of the community to which both A and B belong. If A, who is said to save, pays wages to B, who makes a machine which would otherwise not have been made, when this machine is made something is saved, not before.

Though Mill does not seem, in Book I, chapter v, to regard increased plant, machinery, etc., as savings, but rather as something for which savings may be exchanged, the more usual economic view of savings embodies part of them in plant and raw material, etc., and considers the working up of these into finished goods as a "consumption." But though industrial usage speaks of cotton yarn, etc., being consumed when it is worked up, the same language is not held regarding machinery, nor would any business man admit that his capital was consumed by the wear and tear of machinery, and was periodically replaced by saving. The wearing away of particular material embodiments of capital is automatically repaired by a process which is not saving in the industrial or the economic sense. No manufacturer regards the expenditure on maintenance of existing plant as saving; what he puts into additional plant alone does he reckon savings. It would be well for economists to clearly recognize that this business aspect of capital and saving is also

the consistent scientific aspect. Saving will then be seen to apply exclusively to such increased production of plant and productive goods as will afterwards yield an increased crop of consumptive goods, provided the community is willing to consume them. Saving is postponed consumption, — i.e. the production of future goods, plant, machinery, raw materials in their several stages, instead of commodities suitable for immediate consumption.

CHAPTER XII

THE ORGANIZATION OF EXCHANGE

1. Sturbridge Fair in the Eighteenth Century[1]

Having been at *Sturbridge-fair* when it was in its Height in the Month of *September*, the Year before I was at *Newmarket*, I must say, that it is not only the greatest in the whole Nation, but I think in *Europe;* nor are the Fair at *Leipsick* in *Saxony*, the Mart at *Frankfort* on the *Main*, or the Fairs at *Nuremburg*, or *Augsburg*, reputed any way comparable to this at *Sturbridge*.

It is kept in a large Corn-field, near *Casterton*, extending from the side of the River *Cam*, towards the Road, for about half a Mile square.

If the Field be not cleared of the Corn before a certain Day in *August*, the Fairkeepers may trample it under-foot, to build their Booths or Tents. On the other Hand, to balance that Severity, if the Fairkeepers have not cleared the Field by another certain Day in *September*, the Ploughmen may re-enter with Plough and Cart, and overthrow all into the Dirt; and as for the Filth, Dung, Straw, &c. left behind by the Fairkeepers, which is very considerable, these become the Farmers Fees, and make them full Amends for the trampling, riding, carting upon, and hardening the Ground.

It is impossible to describe all the Parts and Circumstances of this Fair exactly; the Shops are placed in Rows like Streets, whereof one is called *Cheapside;* and here, as in several other Streets, are all Sorts of Traders, who sell by Retale, and come chiefly from *London*. Here may be seen Goldsmiths, Toymen, Brasiers, Turners, Milaners, Haberdashers, Hatters, Mercers, Drapers, Pewterers, China-warehouses, and, in a word, all

[1] This description of Sturbridge Fair was written by Daniel Defoe early in the eighteenth century. Tour of Great Britain, Vol. I, Letter II.

Trades that can be found in *London;* with Coffee-houses, Taverns, and Eating-houses in great Numbers; and all kept in Tents and Booths.

This great Street reaches from the Road, which, as I said, goes from *Cambridge* to *Newmarket*, turning short out of it to the Right towards the River, and holds in a Line near half a Mile quite down to the River-side. In another Street parallel with the Road are the like Rows of Booths, but somewhat larger, and more intermingled with Wholesale Dealers; and one Side, passing out of this last Street to the Left-hand, is a great Square, formed of the largest Booths, called the *Duddery;* but whence so called, I could not learn. The Area of this Square is from 80 to 100 Yards, where the Dealers have room before every Booth to take down and open their Packs, and to bring in Waggons to load and unload.

This Place being peculiar to the Wholesale Dealers in the Woolen Manufacture, the Booths or Tents are of a vast Extent, having different Apartments, and the Quantities of Goods they bring are so great, that the Insides of them look like so many *Blackwell-halls*, and are vast Warehouses piled up with Goods to the Top. In this *Duddery*, as I have been informed, have been sold 100,000 Pounds-worth of Woolen Manufactures in less than a Week's time; besides the prodigious Trade carried on here by Wholesalemen from *London*, and all Parts of *England*, who transact their Business wholly in their Pocket-books; and, meeting their Chapmen from all Parts, make up their Accompts, receive Money chiefly in Bills, and take Orders. These, they say, exceed by far the Sales of Goods actually brought to the Fair, and delivered in Kind; it being frequent for the *London* Wholesalemen to carry back Orders from their Dealers, for 10,000 Pounds-worth of Goods a Man, and some much more. This especially respects those People, who deal in heavy Goods, as Wholesale Grocers, Salters, Brasiers, Iron-merchants, Wine-merchants, and the like; but does not exclude the Dealers in Woolen Manufactures, and especially in Mercery-goods of all sorts, who generally manage their Business in this Manner.

Here are Clothiers from *Halifax*, *Leeds*, *Wakefield*, and *Huthersfield*, in *Yorkshire*, and from *Rochdale*, *Bury*, &c. in *Lancashire*, with vast Quantities of *Yorkshire* Cloths, Kerseys, Pennystons, Cottons, &c. with all sorts of *Manchester* Ware, Fustians, and Things made of Cotton Wool; of which the Quantity is so great, that they told me there were near 1000 Horse-packs of such Goods from that Side of the Country, and these took up a Side and Half of the *Duddery* at least; also a Part of a Street of Booths were taken up with Upholsters Ware; such as Tickings, Sackings, *Kidderminster* Stuffs, Blankets, Rugs, Quilts, &c.

In the *Duddery* I saw one Warehouse, or Booth, consisting of six Apartments, all belonging to a Dealer in *Norwich* Stuffs only, who, they said, had there above 20,000 l. Value in those Goods.

Western Goods had their Share here also, and several Booths were filled with Serges, Duroys, Druggets, Shalloons, Cantaloons, *Devonshire* Kersies, &c. from *Exeter*, *Taunton*, *Bristol*, and other Parts West, and some from *London*, also.

But all this is still outdone, at least in Appearance, by two Articles, which are the Peculiars of this Fair, and are not exhibited until the other Part of the Fair, *for the Woolen Manufacture*, begins to close up: these are the WOOL, and the HOPS. There is scarce any Price fixed for Hops in *England*, till they know how they sell at *Sturbridge-fair*. The Quantity that appears in the Fair is indeed prodigious, and they take up a large Part of the Field, on which the Fair is kept, to themselves: they are brought directly from *Chelmsford* in *Essex*, from *Canterbury* and *Maidstone* in *Kent*, and from *Farnham* in *Surrey;* besides what are brought from *London*, of the Growth of those and other Places.

Inquiring why this Fair should be thus, of all other Places in *England*, the Centre of that Trade, and so great a Quantity of so bulky a Commodity be carried thither so far; I was informed by one thoroughly acquainted with that Matter, That Hops for this Part of *England* grow principally in the two Counties of *Surrey* and *Kent*, with an Exception only to the

Town of *Chelmsford* in *Essex;* and there are very few planted any-where else.

There are indeed in the West of *England* some Hops growing; as at *Wilton* near *Salisbury*, at *Hereford* and *Broomsgrove*, near *Wales*, and the like; but the Quantity is inconsiderable, and the Places so remote, that none of them come to *London*.

Formerly, in the North of *England*, few Hops were used, their Drink being chiefly pale smooth Ale, which required but little Hops; and consequently they planted none North of *Trent*. But, as for some Years past, they not only brew great Quantities of Beer in the North, but also use Hops in the brewing their Ale, much more than they did before, they all come South of *Trent* to buy their Hops; and here being vast Quantities brought, it is great Part of the back Carriage into *Yorkshire*, *Northamptonshire*, *Derbyshire*, *Lancashire*, and all those Counties; nay, of late, since the Union, even so far as *Scotland;* for I must not omit here also to mention, that the River *Grant*, or *Cam*, which runs close by the North-west Side of the Fair, in its Course from *Cambridge* to *Ely*, is navigable; and that by this means all heavy Goods are brought to the Fair-field, by Water-carriage from *London*, and other Parts; first to the Port of *Lynn*, and then in Barges up the *Ouse*, from the *Ouse* into the *Cam*, and so to the very Edge of the Fair.

In like manner great Quantities of heavy Goods, and Hops among the rest, are sent from the Fair to *Lynn* by Water, and shipped there for the *Humber*, to *Hull*, *York*, &c. and for *Newcastle upon Tyne*, and by *Newcastle*, to *Scotland*. Now, as they do not yet plant Hops in the North, tho' the Consumption there is great, and increasing daily, this is one Reason why at *Sturbridge-fair* there is so great a Demand for them: besides there were very few Hops, if any worth naming, growing in all the Counties even on this Side *Trent*, above 40 Miles from *London*, those Counties depending on *Sturbridge-fair* for their Supply: so the Counties of *Suffolk*, *Norfolk*, *Cambridge*, *Huntingdon*, *Northampton*, *Lincoln*, *Leicester*, *Rutland*, and even to *Stafford*, *Warwick*, and *Worcestershire*, bought most of, if not all, their Hops at *Sturbridge-fair*.

This is a Testimony of the prodigious Resort of the trading People of all Parts of *England* to this Fair; where surprising Quantities of Hops have formerly been sold.

The Article of Wool is of several Sorts; but principally Fleece Wool, out of *Lincolnshire*, where the longest Staple is found, the Sheep of those Parts being of the largest Breed.

The Buyers are chiefly the Manufacturers of *Norfolk*, *Suffolk*, and *Essex;* and it is a prodigious Quantity they buy.

Here I saw what I had not observed in any other County of *England*, a *Pocket* of Wool; which seems to have been at first called so in Mockery, this *Pocket* being so big, that it loads a whole Waggon, and reaches beyond the most extreme Parts of it, hanging over both before and behind; and these ordinarily weigh a Ton or 2500 Pound Weight of Wool, all in one Bag.

The Quantity of Wool only, which has been sold at this Place at one Fair, has been said to amount to 50 or 60,000 l. in Value; some say, a great deal more.

By these Articles a Stranger may take some Guess at the immense Trade which is carried on at this Place; what prodigious Quantities of Goods are bought and sold, and what a vast Concourse of People are seen here from all Parts of *England.*

I might proceed to speak of several other Sorts of *English* Manufactures, which are brought hither to be sold; as all Sorts of wrought Iron, and Brass Ware from *Birmingham;* edged Tools, Knives, &c. from *Sheffield;* Glass Wares, and Stockens, from *Nottingham* and *Leicester;* and unaccountable Quantities of other Things of similar Value every Morning.

To attend this Fair, and the prodigious Crouds of People which resort to it, there are sometimes no less than 50 Hackney Coaches, which come from *London*, and ply Night and Morning to carry the People to and from *Cambridge;* for there the Gross of them lodge; nay, which is still more strange, there are Wherries brought from *London* on Waggons, to ply upon the little River *Cam*, and to row People up and down, from the Town, and from the Fair, as Occasion presents.

It is not to be wondered at, if the Town of *Cambridge* cannot receive or entertain the Numbers of People that come to

this Fair; for not *Cambridge* only, but all the Towns round are full; nay, the very Barns and Stables are turned into Inns, to lodge the meaner Sort of People: As for the Fair-people, they all eat, drink, and sleep in their Booths, which are so intermingled with Taverns, Coffee-houses, Drinking-houses, Eating-houses, Cooks Shops, &c. and so many Butchers and Higglers from all the neighbouring Counties come in every Morning with Beef, Mutton, Fowls, Butter, Bread, Cheese, Eggs, and such Things, and go with them from Tent to Tent, from Door to Door, that there is no Want of Provisions of any Kind, either dressed, or undressed.

In a word, the Fair is like a well-governed City, and there is the least Disorder and Confusion (I believe) that can be seen any-where, with so great a Concourse of People.

Towards the latter End of the Fair, and when the great Hurry of Wholesale Business begins to be over, the Gentry come in, from all Parts of the County round; and tho' they come for their Diversion, yet it is not a little Money they lay out, which generally falls to the share of the Retalers; such as the Toy-shops, Goldsmiths, Brasiers, Ironmongers, Turners, Milaners, Mercers, &c. and some loose Coins they reserve for the Puppet-shews, Drolls, Rope-dancers, and such-like; of which there is no Want. The last Day of the Fair is the *Horse-fair*, where the Whole is closed both with Horse and Foot-races, to divert the meaner Sort of People only; for nothing considerable is offered of that Kind, and the late Act, I presume, must have put an End to the former. Thus ends the whole Fair, and in less than a Week more, scarce any Sign is left, that such a Thing has been there, except by the Heaps of Dung, Straw, and other Rubbish, which is left behind, trod into the Earth, and is as good as a Summer's Fallow for the Land; and, as I have said above, pays the Husbandman well for the Use of it.

I should have mentioned, that here is a Court of Justice always open, and held every Day in a Shed built on purpose in the Fair: this is for keeping the Peace, and deciding Controversies in Matters arising from the Business of the Fair. The

Magistrates of the Town of *Cambridge* are Judges in this Court, as being in their Jurisdiction, or they holding it by special Privilege. Here they determine Matters in a summary Way, as is practised in those we call *Pye-Powder Courts* in other Places, or as a *Court of Conscience;* and they have a final Authority without Appeal.

2. An English Market Town of the Eighteenth Century[1]

From *Aberforth* we turned West, and went to *Leeds*, which is a large, wealthy, and populous Town, standing on the North Side of the River *Aire*, with great Suburbs on the South Side, and both joined by a stately, strong Stone Bridge so large, and so wide, that formerly the Cloth-market was kept upon it; and therefore the Refreshment given the Clothiers by the Innkeepers (being a Pot of Ale, a Noggin of Pottage, and a Trencher of broil'd or roast Beef, for Two-pence), is called the *Brigg-shot* to this Day.

The Increase of the Manufactures, and of the Trade, soon made the Market too great to be confined to the *Brigg;* so that it is now kept in the High Street, beginning from the Bridge, and running up North almost up to the Market-house, where the ordinary Market for Provisions begins; which also is the greatest of its kind in all the North of *England*. You may judge of the Plenty of it, when 500 Load of Apples have been numbered by the Mayor's Officers in a Day.

But the Cloth Market is chiefly to be admired as a Prodigy of its Kind, and perhaps not to be equalled in the World. The Market for Serges at *Exeter* is indeed a wonderful Thing, and the Money returned very great; but it is there only once a Week, whereas here it is every *Tuesday* and *Saturday*.

Early in the Morning, Tressels are placed in two Rows in the Street, sometimes two Rows on a Side, cross which Boards are laid, which make a kind of temporary Counter on either Side, from one End of the Street to the other.

[1] This description of the Town of Leeds was written by Daniel Defoe early in the eighteenth century. Tour of Great Britain. Vol. III. Letter II.

The Clothiers come early in the Morning with their Cloth; and as few bring more than one Piece, the Market-days being so frequent, they go into the Inns and Publick-houses with it, and there set it down.

At about Six o'Clock in the Summer, and about Seven in the Winter, the Clothiers being all come by that Time, the Market Bell at the old Chapel by the Bridge rings; upon which it would surprise a Stranger to see in how few Minutes, without Hurry, Noise, or the least Disorder, the whole Market is filled, and all the Boards upon the Tressels covered with Cloth, as close to one another as the Pieces can lie longways, each Proprietor standing behind his own Piece, who form a Mercantile Regiment, as it were, drawn up in a double Line, in as great Order as a Military one.

As soon as the Bell has done Ringing, the Factors and Buyers of all Sorts enter the Market, and walk up and down between the Rows, as their Occasions direct. Some of them have their foreign Letters of Orders, with Patterns sealed on them, in their Hands; the Colours of which they match, by holding them to the Cloths they think they agree to. When they have pitched upon their Cloth, they lean over to the Clothier, and by a Whisper, in the fewest Words imaginable, the Price is stated; one asks, the other bids; and they agree or disagree in a Moment.

The Reason of this prudent Silence is owing to the Clothiers standing so near to one another; for 't is not reasonable, that one Trader should know another's Traffick.

If a Merchant has bidden a Clothier a Price, and he will not take it, he may go after him to his House, and tell him he has considered of it, and is willing to let him have it; but they are not to make any new Agreement for it, so as to remove the Market from the Street to the Merchant's House.

The Buyers generally walk up and down twice on each Side of the Rows, and in little more than an Hour all the Business is done. In less than half an Hour you will perceive the Cloth begin to move off, the Clothier taking it up upon his Shoulder to carry it to the Merchant's House. At about half an Hour

after Eight the Market Bell rings again, upon which the Buyers immediately disappear, the Cloth is all sold; or if any remains, it is carried back into the Inn. By Nine o'Clock the Boards and Tressels are removed, and the Street left at Liberty for the Market-people of other Professions, the Linendrapers, Shoemakers, Hard-waremen, and the like.

Thus you see 10 or 20,000 l. worth of Cloth, and sometimes much more, bought and sold in little more than an Hour, the Laws of the Market being the most strictly observed that I ever saw in any Market in *England*.

3. The Organization of the Grain Trade in the United States [1]

I. The Grain Elevator

The terminal elevator system in the handling of grain begins with the prominence of Chicago as a primary grain market. This point has always been the principal terminus in the receipt of western grain and in its distribution eastward. The terminal warehouses grew out of the necessity of storing the grain from the time it was harvested, or shortly thereafter, to the time when it was required for consumption. The producing districts being generally without adequate storing facilities, the central markets accumulated vast supplies, provision for which was made in the warehouses known as elevators. From 1871 up to 1887 these elevators were handled in such a manner as to be more or less satisfactory to all concerned. They were then regarded as terminal freight stations, and were under independent management. That is, they were operated by persons engaged in no other business.

A new factor in the situation began to appear about 1885, when the warehousemen of Chicago commenced to deal in grain, thereby entering into competition with buyers throughout the grain territory. This practice grew so rapidly that within fifteen years grain-buying warehousemen absorbed three fourths of the business of both buying and selling grain at the Chicago market.

[1] Reprinted from the Report of the Industrial Commission, XIX, 177–184.

During the first three or four years following the enactment of the interstate-commerce law the elevators ceased to be opened on equal terms to the public, and passed into the hands of people who did a combined grain-buying and warehousing business.

This combination of pursuits made its representatives much more important in the control of the grain movement than any grain buyer could be who was not in control of warehousing facilities. The railroads in their competition for grain traffic found the warehousing grain buyer to be most helpful, particularly because of his having established a line of country elevators throughout the territory traversed by the railroad, and because he was in a position to receive the grain at terminal stations and store it promptly or forward it eastward. This had the effect of reducing the cost of transferring grain at Chicago for eastern destinations.

Through rates for shipment to the East and to Europe enabled the large grain dealers in control of warehouses to take advantage of a lower rate than was open to those who were simply receiving merchants at Chicago. This difference between the through and the local rate is in normal times from two to three cents a bushel on corn in favor of the through shipment. The line-elevator buyer can afford to pay the farmer so much more.

Under such conditions as these the terminal-elevator system of warehousing grain has become a central feature of the primary grain markets, which are in more or less complete control of about half a dozen grain firms. This outcome has been mainly due to competition among primary markets, to the necessity of reducing the cost of distribution per unit at Chicago, and to the difficulty of railroads getting what they regarded as their share of the grain traffic without coöperating with the leading representatives of the grain trade.

It is frequently alleged that the prices at which farmers have to part with their crops is determined by the combination of buyers in terminal markets ; for example, that the card prices paid for wheat in South Dakota are fixed by three or four men on the Minneapolis Board of Trade. If this is the case, there

does not seem to be much room for competition among buyers, especially if these three or four buyers are ready to take the bulk of the crops as it comes to the market. A further factor in the control of prices is the existence of the local elevators under the control of these three or four terminal buyers. On the part of the buyers themselves and the trade generally it is denied that any combination on their part really exists. The value of this denial may be inferred from the violent opposition which these terminal grain interests manifest when the local farmers' associations propose to erect local elevators at points on railroads where these leading buyers alone are represented by their own elevators. Where elevators have been erected and operated as independent elevators, a price of from one to three cents more has been paid than at points where no independent elevators were in operation. In a large number of cases the opposition has taken the form of paying a price high enough to drive the independent elevator out of business. Under such circumstances the line-elevator interests simply reveal what they constantly deny, viz. that there is enough of a monopoly in controlling the purchases to lose a good deal of money in driving out any attempt at competition. There is no fact which is inferentially so clear and yet so difficult to prove in courts of law as this, that line-elevator companies succeed, in the absence of independent elevators, in maintaining a monopoly on the basis of common interests among themselves.

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At many points in the grain territory of the West the railroads intersect one another to such an extent as to afford the farmer a choice of routes, but not always competitive advantages, in shipping grain. As a rule, the farmer sells to the local buyer, or to a line elevator at his nearest railroad station. The railroads have to deal directly with the local grain buyer or the line-elevator owners. As a matter of fact the line elevators are in a position of advantage in their relation to the railroads. The railroads depend upon them more than upon any other commercial agency for securing the grain traffic of their railroads. It is not to be supposed that for want of paying a few

cents per bushel by way of a rebate in freight any particular road whose dividends are dependent upon this grain traffic would hesitate to compensate line elevators to that extent for such service.

The relative importance of the line elevators and local dealers' elevators, on the leading grain lines of the West, may be gathered from the figures showing the ownership of grain elevators on the Northern Pacific Railway. At 331 stations there are 743 elevators, of which the line-elevator companies control 430, or 57.9 per cent; the local dealers control 286, or 38.5 per cent; and the farmers' associations, 27 elevators, or 3.6 per cent of the whole number. The almost unanimous testimony of the railroads themselves is that they encourage the erection of an adequate number of elevators in grain-producing territory to enable them to handle this traffic, regardless of whether the elevator is operated by local dealers, line companies, or independent management. Formerly the majority of buyers in the country shipped to commission houses at the central market, but latterly this practice has been abandoned, until fully 80 per cent of the grain that now moves to the interior markets is bought by the large grain concerns.

II. The Inspection of Grain

Practically all of the grain arriving at the large markets of the interior passes through some system of inspection. The inspection officers are, as a rule, selected on the ground of their experience and knowledge of the qualities of grain. They usually have an adequate force of assistants who are on hand to meet the incoming trains loaded with the different kinds of grain. Two systems of inspection are in force, one of which derives its authority from the state, the other of which is provided for by the local boards of trade.

The grain-inspection department of Illinois does not consider it essential to ascertain, when a sample is submitted for inspection, what part of the country or what particular state it comes from. The fact brought out here is that it is after all milling

quality which determines the value of wheat, and not locality, except so far as locality may have contributed to the flour value of the wheat. In the manufacture of standard brands of flour, tastes change, so that the demands of the baking industry vary considerably from time to time. In meeting these demands, both of the bread consumer and of the baking business, it is necessary to mix different qualities of wheat in order to produce a brand of flour which will meet the varying demands of the consuming market. One of the real motives for mixing wheat, therefore, is found in the demands of the baker and the bread consumer.

The farther the wheat gets away from the farmer's hands, the more apt it is to be mixed. The value, therefore, of any particular locality's wheat is determined by its mixing value for milling purposes. A comparatively small proportion of the wheat ground into flour escapes the art of the mixer. Consequently the demand for a law which would prevent the mixing of grain would seem to be based on the assumption that the producer still has an interest in it after it has entered the channels of trade. Such appears, however, not to be the case, and any such law passed, presumably in the interest of the producer, would probably only add to the expense of distribution and throw the burden ultimately upon the consumer.

Attempts to prevent mixing have therefore ignored the essential element in the value of wheat, namely, its milling quality. Demands are still heard for a law prohibiting mixing in elevators. In 1889 the legislature of Missouri passed an act of such a character. It had the effect of driving the elevator business out of Kansas City, Missouri, into Kansas City, Kansas, where a more liberal inspection law was passed. Only a national law could reach all markets alike.

The grain trade, as represented by local dealers throughout the central West, is giving increasing attention to methods of settling disputes and of determining market standards, including such subjects as uniform grades and weights. The National Grain Dealers' Association, at Des Moines, Iowa (October, 1901), gave especial attention to the formation of a committee on

arbitration. The scheme drafted for discussion provides that local committees should act as courts of first resort, the national committee's decision should be final, and its jurisdiction should cover all matters national, interstate, and interlocal pertaining to the grain business wherein any member of the national association or affiliated associations had personal interest. The board of arbitration should be constituted of three persons, one prominent receiver or buyer of grain, located at some central or terminal market, one representative country shipper, and one not entirely identified with either of the above divisions of the grain trade, and all to be selected with consideration of geographical and business conditions.

Likewise, in the growth of the present system of handling grain, organizations of growers have done a great deal to perfect the methods. The National Grain Growers' Association has since its organization in 1896 increased its membership to 2000 and an associate membership to 1645 persons, making in all 3645 members. These representatives in their annual conventions discuss problems and arrive at decisions upon interstate trade, arbitration, boards of appeal, common carriers, state and national laws, terminals, central markets, trade rules and customs, grain inspection, car inspection, and the weighing of grain. It would seem that out of such conditions a national system of grading and inspection might be constructed.

III. The Grading of Grain for Export

The grades for grain at the different markets, both in the interior and at the seaboard, are usually established by the grain committee of some commercial organization, said rules for grading being subject to the approval of the body to which the committee is responsible.

The rules for grading at these different places appear to agree quite closely in the standards which they set. In practice, however, there are different degrees of strictness. Some boards of trade and chambers of commerce require their inspectors to live up squarely to the rules, and others seem to

allow considerable latitude. It seems to be a general rule that the grades of local primary markets which receive at first hand grain from territories contiguous thereto are accepted by other markets as standard. For instance the trade at Cincinnati accepts the Minneapolis and the Milwaukee grades in the purchase of wheat in those markets. To some extent the interior grades are accepted at the seaboard markets.

At the leading Atlantic and Gulf ports, while there is no formal agreement among the inspecting officials of the different ports on the subject of uniformity of grade, it is a fact that the inspection authorities keep more or less in touch with one another, and are cognizant in a general way of the nature of the work performed at all the other ports. The secretary of the Boston Chamber of Commerce says:

"This is due in part to their own efforts to inform themselves of the work done by others, and in part to the fact that each shipper of grain from the West for export makes use of all the Atlantic ports, and any variation in the standards of inspection at the different ports would be brought into immediate notice."

Owing to these conditions, namely, substantial uniformity in the rules of inspection and the commercial necessity of any particular port keeping its standard up to those observed by other ports, there seems to be now in existence a practically uniform standard for the exporting grades of cereals at all ports having an official inspector. A further step in the direction of more complete uniformity has been taken in the recent organization of an association of the chief inspectors of the different grain-handling centers of the United States.

An analysis of the rules governing the inspection of grain at several of the leading markets shows that the following eight characteristics are taken into account in the classification and gradation of cereals: (1) locality of production, (2) season of sowing, (3) weight, (4) color, (5) cleanliness, (6) purity, (7) dryness, (8) soundness.

It is evident that while in practice uniformity of standard grades already prevails within certain limits, it is equally true,

as the president of the New Orleans Board of Trade remarks, "that the difficulty in the way of fixing and enforcing a uniform standard of export grades is due to the difference in the character of the grain raised in the territories contiguous to the various ports of shipment, which makes quite a difference in the value of grain technically of the same grade. At the present time (November 20, 1901) new-crop wheat from New Orleans will bring better prices than wheat from most any other port in the country."

Any effort to put into legal enactment the requirements of an export standard grade of grain would have to proceed on the basis of this inevitable influence of producing locality upon commercial quality. Allowing for this, there does not appear to be any good reason why each important kind of grain might not be defined for export purposes by weight per bushel and by characteristics of quality, such as soundness, dryness, cleanliness, and purity.

4. Speculation on the Produce Exchanges of the United States[1]

The foregoing chapter has dealt with the organization of those speculative markets known as "exchanges." Speculation, however, may occur in any market. A purchase or sale, to be speculative, does not need to be at a particular place or under the control of any particular organization. Nevertheless speculation in securities and in a few forms of produce has become of such extent that it has assumed an organized form with a special machinery. Such speculation is confined to transactions of a particular kind made under certain fixed conditions, all of which matters are regulated by the exchange on which such trading occurs. It is only with this organized speculation of the exchanges that the present essay is concerned. In examining the rules of such trading it will be convenient to begin

[1] By Henry C. Emery. Reprinted, with the consent of the author and the Columbia University Press, from Speculation on the Stock and Produce Exchanges of the United States. In Columbia University Studies in History, Economics, and Public Law, Vol. VII [New York, 1896].

with the simplest methods adopted, namely, those for speculation in produce.

Speculation in produce is to-day always associated with that particular kind of contract known as a "future." The future is primarily a contract to be fulfilled at some future time, and as such is one of a large class of business transactions. Some contracts by nature require a future fulfillment. Such are all contracts for services, contracts for building, and the like. Some contracts, on the other hand, are entered into long before the period set for fulfillment merely because one of the contracting parties thinks he can secure better terms at the time of contract. He fears possible changes in the conditions affecting such a contract. If the changes in question are price changes, and the contract is for the delivery of goods, the opportunity for speculation appears. All time dealings arise from a desire to provide in the present for the events of the future. Speculative time dealings arise when an anticipated difference in the present and future prices of the commodity in question leaves room for a possible profit.

This method of speculation by means of time dealings arose later, and has been much less common, than the simple speculation of buying property outright and holding it for a rise. The latter form of speculation is found everywhere and at all times, and is entirely independent of any organization or any rules of commercial custom. Since Thales cornered the olive presses of Miletus,[1] or Joseph, still earlier, cornered the grain of Egypt, such speculation has been universal. It is not unreasonable to believe that time dealings of some kind also arose wherever commerce was well developed, especially as a highly advanced form of such dealings seems to have occurred in securities, at least, in the days of the Roman Empire.

It is only, however, in the last few centuries that unquestioned evidence appears of "future dealings" of a well-developed kind. In Holland, early in the seventeenth century, time

[1] See Aristotle, Politics (Jowett's translation, London, 1885), I, II, § 8. It is interesting to note that Thales, being a man of moderate means, worked his corner by securing options on the use of the presses at the next harvest season.

transactions took place in the products of the whale fisheries. The great uncertainty of the industry and the consequent fluctuation of price led dealers to sell the products of any particular voyage long before its result became known. The tulip speculation of this period, 1634–1637, is famous. In 1698 time dealings in grain were forbidden in Antwerp. Much more important than this early dealing was the business which had grown up in the first years of the eighteenth century, and which was described in 1722 by Ricard, in "Le Négoce d'Amsterdam." [1] At this time practices almost identical with those of the modern speculative market were common in the trade in grain, coffee, cocoa, saltpeter, and other commodities,[2] being particularly advanced in form in the case of coffee.

It was not until the present century, however, that the system became widely developed, and not until the great expansion of foreign trade in the last fifty years that it became of great importance.[3]

The beginnings of the development are found in the case of articles of foreign trade, though these earlier time dealings were very different from the improved practices of to-day. They were sales "for forward delivery," but for the delivery of some particular lot of goods, and were made on the basis of samples forwarded or sometimes on the basis of a fairly recognized standard, with allowance made in the payment for any variation in quality when the goods were delivered. These sales arose from the desire of the dealer to take advantage of a favorable

[1] For the best account of these early dealings see Jacobson, Terminhandel in Waaren (translated from the Dutch, Rotterdam, 1889). Cf. also Fuchs, Der Warenterminhandel, p. 5, reprinted from Schmoller's Jahrbuch, Vol. XV, Heft 1.

Kohn, Der Getreideterminhandel, p. 28 [Leipzig, 1895], quoting Roscher, says that sales of grain before it was threshed, or of herring before they were caught, were forbidden in the Hanse cities in 1417. Cf. a similar local ordinance in England in 1357, Cunningham, English Industry and Commerce, I, 296.

[2] See Jacobson, *op. cit.* footnotes to pp. 77, 79, for typical forms of "futures" and of "puts and calls," taken from Ricard.

[3] Tooke, for example, writing about 1840, speaks of the speculation that occurred in certain spices in 1825, which consisted simply of successive purchases on a rising market without intermediate deliveries, as a "very rare occurrence in the markets for produce." — History of Prices, III, 159.

price before his goods were ready, as was the case in regard to the whale products in Holland. An importer of cotton from this country into England, for example, would fear to await the arrival of his cargo before selling, and would sell the cotton "in transit," or "to arrive." The goods might even be sold abroad before leaving the southern ports, in which case the contract would read as a sale of so much cotton "for shipment." Closely connected with these methods was the development of the so-called "ports of call," which are still of importance in export trade. These are central ports to which goods are originally shipped, and where orders are received fixing their ultimate destination. Before arrival the consignee at the port of call sells the goods in the best market for the moment, and on its arrival gives orders for the vessel to proceed to the port where the goods have been sold.[1] Dealings for forward delivery were practiced in the domestic trade almost as early as in the export trade. In the case of lake and canal shipments, grain was largely sold ahead by sample "to arrive" and "for shipment." These are still regular methods of trading; for example, much wheat "to arrive" is bought by the miller, or cotton "to arrive" by the spinner; but to-day these transactions are merely for the matter of convenience of delivery. Their old importance as insurance against fluctuating prices has disappeared with the advent of the improved methods of the speculative market.

It was only with the development of the warrant and grading system, however, that the real future became possible. The use of warrants began in England in 1733 in the business of the East India Company. Their possibilities so quickly became evident that at an early date complaints appear of well-developed abuses through fraudulent issues. The function of the warrant was to transfer ownership without any actual transfer of the goods. Secondarily it facilitated advances of capital against the goods held. Both these advantages gave a

[1] For example, goods may be consigned "to Cork for orders," with stipulation in the shipping contract concerning the right of further delivery; thus "privilege U. K." means that the ship must proceed to any port in the United Kingdom designated by the consignee. Cf. also Kohn, *op. cit.*, p. 29.

stimulus to trade, and there arose an active business in warrants of a more or less speculative nature. They passed easily from hand to hand and frequently bore many indorsements before finally being presented for the goods. In these cases, however, the warrants were special receipts; that is, they represented specific lots deposited, and no established grades were fixed in terms of which sales for forward delivery could be made; hence the speculation in them was limited to the kind of speculation that might take place through buying and selling the goods themselves. It was only in the case of the metals that a grading system and general warrants came into use. Until this method was adopted no one could sell goods before purchasing them, so no organized speculation for future delivery could arise.

In the case of metals, especially iron, the warrant system received an important extension. The warrant became a general warrant, that is, a receipt for no particular lot deposited, but merely a transferable order for an equal amount of the given commodity of the same grade. This was made possible by a fixed system of grading, all the iron of the same grade being stored in bulk to be taken out on presentation of the warrants. Thus the ordinary warrant for Scotch pig read for 300 lbs. of No. 1 and 200 lbs. of No. 3 pig iron, and was made good by a delivery of those amounts and qualities, without reference to the specific iron deposited.

In England warrants issued in terms of recognized grades were extended gradually to other commodities. In the United States they developed independently in the case of the great agricultural staples. What the import trade did for England in developing these methods was done for this country by the export trade on the one hand and the internal trade on the other. The striking increase in the grain and cotton business in the United States during the last fifty years has been accompanied by the growth of commercial practices that are of great interest to the student. Untrammeled by business traditions of past centuries, or by the tendency to fit new conditions to old methods, the trade of this country has unconsciously

adopted new and direct means for attaining its ends. There has been little "history" or "evolution" about the process, for the practical mind of the business man has simply seized the most direct method of facilitating business, a course forced on him by the constantly increasing size of his transactions.

Thus in the growth of receipts at export points is found the cause of the adoption of the warehouse system, while the extension of the railroads into the vast wheat fields of the West led to a similar storage system there. Grain elevators sprang up along the lines for the convenience of the producers, the dealers, and the roads themselves. The movement of vast crops from such scattered sources was increasingly difficult under the old method of selling by sample, and during the fifties the system of grading was fully adopted. As wheat was presented for storage it was inspected and classified in established grades. Receipts (warrants) were issued by the elevator or warehouse according to the grade, and became the equivalent in the market of the given amount of the given grade. By 1860 most of the grain in Chicago was duly graded. These receipts, although made in terms of fixed grades, were at first specific orders for actual lots deposited. With the enormous storings of grain in bulk, however, the difficulties of delivering at any moment the actual wheat deposited on a warrant became increasingly great. Consequently a change was made to the system of general receipts. Grain received by the railroad or the warehouse was properly graded and classified, and all the grain of the same grade was stored in bulk without regard to particular lots. A delivery of the receipt constituted a fulfillment of a contract, and in fact the receipts themselves might be considered the commodity bought and sold, since they were rights to receive a certain amount of the given grade on demand.

This practice of issuing general receipts began early in the West but was not adopted in New York till 1874. It has never become established in the cotton trade. Cotton is not stored in vast quantities in terminal warehouses, and lacks entirely the flowing quality of wheat, which makes the storing and "loading out" of that commodity so distinctive a process.

The development of the system of grading and of elevator receipts is the most important step in the history of the grain trade. It is only with such a machinery that an extension of forward sales in the modern sense is possible, that is, of forward sales of goods having no definite existence until the moment of delivery. The goods may or may not be in the possession of the seller at the time of the contract. When they are not, and when the seller has made no contract to receive them, such a transaction is called a "short sale." The seller merely contracts to deliver a certain amount of a certain grade of the commodity in question. Such transactions may be made to any extent as soon as a commodity is regularly graded and classified, and receipts of a stereotyped kind are accepted as a good delivery. The future fulfillment of the contract is assured by the possibility of getting such receipts. A full-fledged speculation is at length made possible. Without a system of grades and receipts there could be no "short selling," and without short selling there could be no operations "for the fall," that is, operations in which the dealer seeks to secure profit by selling for forward delivery at one price and by making the delivery with goods bought later at a lower price. Under the old methods "bull" speculation alone was possible; the speculative market is not complete till the machinery for "bear" speculation is added.

It is stated that the future contract proper, however, was preceded in the West by a form of dealing which is of peculiar interest as an early form, because it is both the form of transaction which now prevails in our stock exchanges, and one which has recently been suggested as a possible substitute for the present method of the produce exchanges. This dealing was effected through a process of borrowing which had also sprung up in the trade in Scotch pig warrants referred to above. When much wheat had been stored in the elevators and many receipts had been issued, the holders were glad to loan these receipts against cash and get the use of the money during the time of holding. Thus any one looking for a fall in price could sell wheat which he would deliver by means of borrowed, transferable receipts properly indorsed by the holder, expecting to be able to

replace these, when demanded, by purchases of receipts at a lower price. There was never any obligation to return the identical receipts, since all receipts for the same goods were equally good. In this way a single receipt might serve for the satisfaction of any number of contracts. In such a system, however, the extension of short sales was limited by existing stocks, that is, by the number of receipts for borrowing in the market. The possibility of a combination of the holders of wheat always put a limit to the number and size of contracts to be settled by such loans.

It was perhaps the hardship of this restraint on trade which hastened the adoption of the "future" system. The future once established, transactions for future delivery increased enormously on those exchanges which formed the chief markets of the country. The necessity of uniform and fixed regulations for such contracts, and the increased complexity of a growing business, led to the gradual growth of a body of rules on the various exchanges by which all the details of such contracts are regulated.

It is difficult to say how early dealings in "futures" in the United States began. As soon as they became of importance the exchanges adopted rules controlling them. The first appearance of printed rules for "future" trading in the reports of the Chicago Board of Trade was in the report of 1869. Such trading had been more or less actively carried on for four or five years before. In the evidence before the Congressional Committee on Agriculture, in February, 1892, it was stated that the government contracts for pork during the Civil War were the beginning of future trading. Cases of such trading, however, probably occurred in a small way as early as 1855.[1] Trading in futures began in other western markets, such as St. Louis, Milwaukee, and Toledo, at about the same time, Milwaukee taking the lead as early as 1855. In New York it appeared some years

[1] Future dealing was adopted considerably earlier in Europe. Futures were sold in some kinds of grain in Berlin by 1832, and some years earlier in France and Holland. See Fuchs, Der Warenterminhandel, p. 6, Jacobson, *op. cit.*, pp. 85, 89.

later, not becoming of great importance until the later seventies. The first public call in grain on the New York Produce Exchange was May 17, 1877, and in pork and lard, January 31, 1876,[1] but future sales occurred some years before these dates.[2]

The first rules were adopted for the petroleum trade, and "wash sales" in that commodity were already complained of in 1873.[3] The first future trading of importance in New York was in cotton. It began soon after the Civil War, and was due to the great uncertainties of the cotton trade at that time.

It appears that a period of only thirty years covers the real growth of the vast body of speculative transactions in this country, and of the code of rules which regulates them. Without attempting to consider in detail the changes made in these rules, it remains to examine their workings as exemplified in the exchange business of to-day. The importance of the grading and classification of a commodity thus dealt in has already been emphasized. To be sold "short" a commodity must be representative, that is, of the same quality throughout. This property is fairly exemplified in grain and cotton and provisions, but is made complete by means of an established classification. For contract purposes each grade is truly representative. The fixing of grades is then a factor of the greatest importance in the speculative system. The early grading, however, was of an untrustworthy kind until the produce exchanges, as preëminently concerned in the matter, began to adopt rules to control it. In some cases the exchanges still maintain this control, but several of the Western States, notably Illinois, Minnesota, and Missouri, containing the important markets of Chicago, Minneapolis, and St. Louis,

[1] See *Report of New York Produce Exchange*, 1881.

[2] Statistics of transactions for early years give an idea of the degree of importance of such dealing. (From *Report of New York Produce Exchange*, 1881.)

	Wheat (bushels)	Corn (bushels)	Lard (tierces)	Margins
1877	15,061,000	17,862,000	268,000	$673,776
1879	34,358,000	27,847,000	859,250	2,783,854
1881	44,492,000	41,912,000	782,000	10,716,838

Compare with these figures the sales of wheat and corn in 1893, 1,281,811,000 bushels and 239,257,000 bushels.

[3] See report of Produce Exchange of that year.

have removed the inspection of grain from the exchanges and have made it a state function. In these states the inspectors are state officials and the grades are fixed by a state board, — in Illinois by the Board of Railroad and Warehouse Commissioners. In the case of provisions, however, in Chicago grading is still regulated by the Board of Trade. In New York the Produce Exchange has provided rules for the inspection and grading of all commodities which are dealt in on the board. Warehouses are duly authorized, sworn inspectors and gaugers are provided, grades are established, and receipts of a set form are issued. All contracts are made in terms of these grades, and all settlements are made by the transfer of these receipts.

There is a lack of uniformity in the grading of grain in different states and different exchanges, which is a cause of some confusion to the trade. Each exchange or state board can fix its own grades, and can change them at any time. In Chicago there are about twenty-five grades of wheat and about ten grades of corn, and about the same number in New York. The classification in the two exchanges is, however, not the same. The contracts on the produce exchanges specify the grade, and only a delivery of that grade, or some higher grade, constitutes a settlement of the contract. The provision that a higher than contract grade constitutes a good delivery was adopted comparatively recently with a view to avoid "corners." So large a proportion of the transactions are made for speculation that in the case of wheat and pork special "contract grades" are established, which are understood in all contracts not specifying the contrary. "Contract wheat" is in Chicago No. 2 wheat, either Spring or Red Winter; in New York it may be No. 2 Red Winter, No. 1 Northern Spring, or No. 1 Hard Spring.[1] In the

[1] The "contract" or "speculative" grades vary considerably in different markets. At Minneapolis there is one such grade, No. 1 Northern; at Duluth two grades, No. 1 Hard and No. 1 Northern, at St. Louis one grade, No. 2 Red Winter. Further confusion is caused by changing the contract grades. For example, at St. Louis when there was a scarcity of No. 2 Red in 1895, a particular variety, known as Turkey Red and grown chiefly in Kansas, was made a contract wheat, but was abolished after a year's trial. The contract grade must of course depend upon the local conditions, and will embrace the variety or varieties constituting the chief receipts at the market in question.

case of pork, unless the grade is specified in the contract, mess pork is understood. On the cotton and the coffee exchanges the rules are different. Like the produce exchanges, the New York Cotton Exchange provides for a grading and classification of cotton with sworn inspectors and the like ; but it has an entirely different feature in its quotation and revision committees. These committees fix the price of the various grades of cotton in terms of one particular grade, Middling Uplands.[1] The form of contract, therefore, does not specify the delivery of any particular grade, but the price reads for Middling Uplands, and any grade from Good Ordinary to Fair, inclusive, may be delivered, with allowance in the price (as fixed by the Revision Committee) for its variation from Middling in quality. Some of the effects of such a provision will be considered in a later chapter.

Besides these fixed stipulations regarding grades that are uniform for all contracts, there are on all the exchanges stereotyped conditions regarding the amounts to be delivered. Contracts are made in terms of a fixed unit of amount. On the Chicago Board of Trade the unit in the case of grain is 5000 bushels. Contracts are made in multiples of this unit as a matter of convenience, and all deliveries on contracts are made in lots of 5000 bushels. The same unit is used in New York. Where wheat or corn is sold, however, in "boat-load lots to arrive," 8000 bushels is understood. In such cases 10 per cent deficiency or excess from the contract amount does not vitiate the delivery. In the regular contract a 5 per cent variation is allowed in New York, and a 1 per cent variation in Chicago. In any case the excess or the deficiency is to be settled for at

[1] The Quotation Committee consists of seven members, and meets twice a day to fix the official quotation of Middling Uplands and of all other grades in terms of this one, according to the relative differences established by the Committee on Revision of Quotations. This latter committee consists of nine members, who meet nine times a year, and determine the relation of the values of all other grades to the value of Middling, which becomes the basis of the official quotations until the next revision. The same is true of the New Orleans Cotton Exchange and the New York Coffee Exchange. In the latter exchange the Spot Quotation Committee posts daily the values of all grades in terms of No. 7 (Low Ordinary), and any question of the revision of the comparative values of the standard is referred to the governing board.

the closing price of the day of tender. Similar units of sale exist for other products; for example, in mess pork and lard 250 packages for large sales, 50 packages for smaller sales; in cotton 50,000 pounds "in about 100 bales"; in coffee 32,500 pounds "in about 250 bags." In the European exchanges similar rules exist. In the case of wheat in Berlin, the minimum or *Schluss* is 1000 *Zollcentner*, about 1900 bushels, in Budapest 1000 *Metercentner*, about 3750 bushels, in London 250,000 pounds. Similar allowances are also made for deliveries in slight variation of the contract amount.

Another feature of the time bargains made on the produce exchanges is the determination of the time of fulfillment. The products which are sold for future delivery come into the market continuously, and yet irregularly, and cannot be promised for delivery on any fixed day. At the same time, the date of delivery within certain limits is rigidly fixed in the contract. In this country the universal practice is to specify the month of delivery and allow the seller the option of delivering on whatever day of the month he may prefer. Thus if wheat is sold for May delivery, "seller's option," the wheat may be delivered on any day of the month, and must be taken and paid for by the ultimate purchaser whenever he is served with due notice of intention to deliver. On the other hand, if it is not delivered before, the seller is bound to deliver on the last day of the month. Occasionally the option as to the day of the month is given to the buyer, and the contract then reads "buyer's option"; but this is unusual, and seller's option is always understood unless otherwise stated.

There are no regular sales on American exchanges for which the option for delivery extends beyond a single month.[1] In Europe, however, sales are frequently made for a longer option, — for two months, or even for four or six months; in Paris, for example, for the four *premiers mois*, January to March, or four *chauds*

[1] By this is meant the time within which delivery may be made. Futures may be sold six months or more ahead, but the contract specifies some one month in which delivery is to be made. Although no longer options than one month are quoted, there are sometimes sales of "year corn," that is, corn to be delivered (seller's or buyer's option) at any time within the current year.

mois, May to August. There are also in Germany and Austria specially fixed periods, March and April, called the *Frühjahr-Termin*, and September and October, called the *Herbst-Termin*. The delivery is effected in a similar way, however, as in American exchanges, the only difference being the length of option.

The foregoing description of the conditions of the contract for future delivery makes it possible to summarize in the form of definitions the conclusions reached. It is common experience that commerce cares little for definitions, and that accuracy in terms is generally secured only after more or less has been written on a subject of this nature. The Germans, for example, have arrived at a distinct use of terms which we can hardly equal unless we go beyond the familiar language of business. The "future," as distinguished from other forms of time dealings, evidently depends upon the existence of warehouse receipts issued in terms of fixed and accepted grades, by which means a commodity is made entirely representative. It also depends upon an organized market, for without strict regulations from a central body the grading and classification of commodities would be impossible, and the difference in form of contract would be too confusing to admit of any great extension of that kind of business. It is then perhaps correct to define a "future" as a contract for the future delivery of some commodity, without reference to specific lots, made under the rules of some commercial body in a set form, by which the conditions as to the unit of amount, the quality, and the time of delivery are stereotyped, and only the determination of the total amount and the price is left open to the contracting parties. At least futures not so made are a rare exception.

Another important class of transactions are the dealings "for cash." These "cash" or "spot" contracts are merely the outright sale and purchase of goods for immediate delivery.[1] They do not necessarily imply a cash payment, as the seller and buyer can make their own arrangements as to the giving of credit.

[1] In the midst of the transactions on the board actual delivery of the receipts at the moment of contract is evidently impossible, but "spot" contracts are stereotyped in form, and delivery under the rules is postponed until the close of business on that day.

They do, however, represent actual goods available in the market at the moment. It is a mistake, nevertheless, to associate "spot" dealings with "actual business," and futures with speculation. Spot dealings may be purely speculative, as where a person buys and sells in order to profit by daily fluctuations in the spot market, or buys "spot stuff" outright to hold for a rise, or, finally, makes cash purchases to settle on future contracts previously made. On the other hand, contracts for future delivery are as much a part of trade contracts as cash sales are a part of speculative contracts. It may be by futures that the dealer sells and the miller buys his wheat, or that the merchant sells and the manufacturer buys his cotton.

The amount of futures sold on the exchanges, however, far exceeds the amount of cash dealings. The figures for the Produce and Cotton Exchanges of New York for 1895 are:[1]

Wheat		Cotton	
"futures," .	1,443,875,000 bushels	"futures," .	63,828,300 bales
"spot," . . .	43,405,076 "	"spot," . . .	240,456 "

When it is remembered that the unprecedented wheat crop for 1891 in the United States was little more than 600,000,000 bushels, it will be seen that the annual sales on the New York Exchange alone far exceed the amount of the annual crop. Yet the New York market is small compared with that of Chicago. No comparative figures of spots and futures are available for the latter market. The amount of clearings on future contracts, however, under the method of clearing differences to be described below, gives some idea of the enormous extent to which such tradings are carried on in Chicago."

	Clearings	Balances
1891	$104,083,529	$32,430,827
1893	68,707,668	26,896,677
1895	78,133,437	28,726,400

Though the sales in New York are only a fraction of those in Chicago, they are far greater than those of any other grain exchange.

[1] See *Bradstreet's*, January 4, 1896. It is doubtful if these figures, though official, include all the transactions made.

CHAPTER XIII

PRICES

1. The Relation of Retail Prices to Wholesale[1]

So far as I have been able to ascertain, there are no instances of constant and definite relation between wholesale and retail prices; and in most cases, if not always, the fluctuations are greater in wholesale than in retail prices. The fluctuations in wholesale prices have probably increased in frequency with the facilities for rapid carriage and rapidly conveyed intelligence by telegraph and telephone, but have been kept within a narrower range. If all trade were free and all dealers solvent and sufficiently wealthy for the purposes of their trade, fluctuations would be reduced to a minimum, but they would by no means cease, so long as buyers and sellers differed in business ability, mental constitution, and social habit, qualities which enter into and influence prices to a degree greater than might at first be thought possible.

One would expect to find the relation between wholesale and retail prices much nearer uniformity in those articles of commerce which are prime necessaries of life, — such as bread, meat, fuel, clothes, — than in the case of other articles, because of the universal interest in their cost and the greater publicity of their wholesale prices arising from such interest. In the case of wheat there is probably as near an approach to uniform relation in its wholesale price to the retail price of bread as in the case of any article of general consumption. The variations in this relation are those chiefly which are common to almost every case, such as skill in buying, command of capital, and tricks of trade within very limited range. One reason of this comparative

[1] By Robert Newman. Reprinted from the *Economic Journal*, September, 1897.

uniformity is the small amount of credit given in the retail of bread and the absence of any considerable variety in quality not easily detected. Of course there is variety, but retail price follows the quality pretty closely.

Goods rapidly perishable afford good examples of pretty uniform ratio of wholesale to retail prices. Rapid sale is imperative ; supplies are governed largely by conditions of weather, and competition has generally free play. Fruit, table vegetables, eggs, and especially fish, are examples which will occur to every one. Discrepancies between demand and supply will modify the relation of price in this, as in all cases ; the perishable character of the articles, too, fixes a sudden limit to the demand, whilst it does not materially or so readily affect the supply, — the lowest price does not tempt the purchaser to buy more than he can immediately use.

Some less perishable articles of food, such as bacon, butter, cheese, appear to be subject to constant variations in wholesale price, whilst the retail prices remain steady. In these cases there is no excessive variation either in the demand or the supply over such periods as the goods can be safely kept, at any rate in the case of bacon and cheese ; and the fluctuations in wholesale price appear to arise from the partial union or the competition of wholesale dealers.

The relation of wholesale to retail price of butcher's meat is more complex. The whole carcass of ox, sheep, or pig is bought at a price per stone, according to quality and market fluctuations, — which are considerable. The retail prices are much steadier, though subject to fluctuations as regards particular joints ; for example, in winter most of those inferior parts usually eaten boiled are sold for prices little below those of prime joints, whilst in the summer they sell for little over half the price of prime joints. But the more important variations in price depend upon the skill of the butcher in gauging the means and disposition of his customers. This is of course not a peculiarity of butchers, but in so prime an article of consumption as meat it is remarkable that so much laxity in fixing the relation of wholesale to retail prices should prevail and should

have been tolerated for generations. It seems quite a rare thing for a butcher to sell his joints at fixed prices even to people paying ready money; and it is, I am told, common to charge various prices to customers taking credit, without so much regard to the safety of the account as to the disposition of the buyer. The variations are widest where the butcher's customers differ most in social status. Where they are mostly wealthy charges can be made high enough to include a good rate of interest on the account; but even in such cases there are variations arising from the disposition of the customers. Where the customers differ much in social status meat of varying quality can be sold, but the same kind of variations are common throughout. In the poorest markets the fierce and more public competition of retailers forces down prices and leaves room only for the trifling variation determined by higgling.

In so common an article as salt, which is not easily perishable and of which there is no natural scarcity, one would look for something like uniformity in price both actual and relative. What variation there is in the wholesale price seems to be the result generally of the action of "rings" of wholesale dealers. In retail price there is much variation, bars of 17 pounds being retailed at prices varying from $3\frac{1}{2}$ *d.* to 6 *d.* per bar. Small quantities are sold at from about $\frac{1}{4}$ *d.* to 1 *d.* per pound. The wholesale price is now 34 *s.* per ton, or about 5 pounds per penny. Salt is but rarely weighed, and one of the tricks of the trade is to make bars of about 24 pounds for 28-pound bars to assist cutting dealers.

The influence of advertising upon retail prices is very remarkable. The subjective result of advertising is a form of insanity to which perhaps we are all more or less liable, and is seen as certainly in subscriptions to a memorial of Sacheverell in Southwark Cathedral as in the purchase of twopennyworth of pills for 1 *s.* $1\frac{1}{2}$ *d.*

The master soap makers of London have a trade union and meet periodically to determine uniform rise or fall in prices to retail dealers. The prices among themselves are not uniform, but were determined by competition before the formation of the

union, the variations being maintained by reputation, disposition to give credit, or quality of goods.

The present price at which one of these firms is selling best yellow soap to retailers is £17 per ton net, which works out at $7\frac{2}{7}$ farthings per pound, or within a fraction of $5\frac{1}{2}$ *d.* per 3-pound bar. A few linen drapers and grocers are selling this soap at $5\frac{1}{2}$ *d.* per bar, as a bait to catch customers for other articles bearing a profit. Leaving these unscrupulous dealers out of consideration, ordinary retailers are selling at 6 *d.*, $6\frac{1}{2}$ *d.*, 7 *d.*, $7\frac{1}{2}$ *d.*, 8 *d.*, and $8\frac{1}{2}$ *d.*, per bar. In small quantities it is sold at 2 *d.*, $2\frac{1}{2}$ *d.*, 3 *d.*, $3\frac{1}{2}$ *d.*, and 4 *d.*, per pound.

Some soap maker, having hit upon the device of cutting up the three pounds into single pounds for the convenience of the retailer, the practice was followed by others, and large quantities were sold at from 2 *d.* to 3 *d.* per pound bar. An advertising firm met this by putting the smaller pieces into a wrapper, to give them the respectability lacking in the naked bar or the plebeian pieces. The cover lent itself to the purposes of the advertiser ; but the advertiser must, by fair or foul means, get a larger profit than the fair dealer who does not advertise. If the stimulus of monstrous and unscrupulous advertising is only made sufficiently exciting, the advertiser can venture to do things which would excite the envy or perhaps even prick the conscience of the ordinary tradesman. If the public persistently demand a particular quack medicine or a particular maker's soap, it is imperative on the dealer's part to supply the demand. The wrappered bars were made up to resemble the ordinary pound bars, but weighed only 12 ounces, and were not of course called pound bars. The bait took with the public. The dealer was charged a rather higher price for 12-ounce bars than he paid for the pound bars of other makers, but he had to supply the demand. The advertising firm stipulated that the 12-ounce bars were not to be sold for less than $2\frac{1}{2}$ *d.* each, some compensation being offered for the lower profit in the shape of a bonus on the disposal of a minimum quantity in a given time. The private purchaser is thus charged $3\frac{1}{2}$ *d.* per pound or 10 *d.* per three pounds, for soap procurable at 30 per cent less by ordinary dealing, but

without the stimulus furnished by the advertiser. Other firms followed suit with 12-ounce bars at a lower price, but the advertiser had the start, and all kinds of mania subside slowly.

The practice of stipulating with retail dealers that an article shall be sold at or above a given price is not uncommon with wholesale dealers in the case of commodities commanding a certain sale — the effect generally of exorbitant advertising. A particular brand of whisky for example is sold to the retailers at 2 *s.* 9 *d.* per bottle, with the covenant that they shall not sell it for less than 3 *s.* 6 *d.* per bottle ; whilst another brand sold wholesale at the same price but with no such agreement is retailed at prices varying from 2 *s.* 10 *d.* to 3 *s.* 6 *d.* per bottle. Here the dealer's cupidity is made to assist the whisky drinker's insanity.

The skill of the retailer in hitting the taste of his customers will sometimes govern the price at which he can sell his goods. In the case of the two stimulants, whisky and tea, they are, as sold, mostly blends from different distilleries or of different growths. The blending in both cases is now generally done by the wholesale dealer, but not always. Here the profit includes wages for skill in blending, but the skill may cover a kind of fraud. The dealer sometimes finds that a low-priced article of peculiar flavor and perhaps of deleterious character is relished by a particular set of customers, and that he can charge them a relatively high price for such an article ; and unless some neighbor gets to know his trade secret and undersells him, he will continue to benefit by the bad taste and ignorance of his customers.

Sometimes the introduction of articles of foreign make will show excessive variations in their wholesale price until prejudice is overcome and similar articles of home manufacture are supplanted. A dealer in china and glass showed me three quotations for a German-made ale glass, by different agents of different makers, the glasses being very much alike. The price for a glass made in England of the same shape and size but of better quality — quality, however, not counting for much in the greater part of the demand for that particular article — was 30 *s.* per gross. The German quotations were respectively 15 *s.*, 12 *s.*, and 10 *s.* 6 *d.* per gross.

In ironmongery there appears to be an astonishing lack of uniformity in retail prices. The wholesale prices are governed by an ever-shifting scale of discounts from prices fixed at long intervals. The rate of discount appears to be adjusted by the wholesale dealer by competition, length of credit given, and risk according to his own judgment. The retailer appears to make the best of his goods, and is only affected in the sale of articles in large demand by competition. As an experiment I sent to four shops in the same neighborhood for such articles as screws, nuts, nails, and common tools, and found the prices charged different in each case.

The same remarks apply to the retail prices charged by chemists. Each chemist is "a law unto himself" as to the prices charged for common medicines, and, indeed, for most of the drugs which he sells.

Perhaps there is no article of general consumption in the sale of which economic friction is better illustrated than in that of coal. On the face of it, one would think that the relation of wholesale to retail prices might be constant. As regards land-borne house coal there is a working understanding between the coal owners and the London merchants that when retail prices advance 1 *s.* per ton, the colliery prices are to go up 6 *d.* per ton. That looks as if every advance of 1 *s.* per ton would put 6 *d.* per ton extra profit in the pocket of the coal merchant. That would not be quite the case under any circumstances, but it might come very near to it. The cost of screening increases with every advance in price, because of the limited demand for the small coal, and its decrease in value with its increase in quantity. A small dealer getting the advanced price for all his coal, would, however, benefit to the extent of an extra 4 *d.* per ton or thereabouts with every rise of 1 *s.* on the retail price. But such instances are of little importance to the general trade or to the colliery proprietors. A very large proportion of the trade of London is done by merchants whose practice it is to compete for contracts for the delivery of coal over long periods at fixed prices; and with every advance of the colliery price their profits diminish on these contracts. What happens therefore is this: the general

public buying in comparatively small quantities helps to pay in enhanced prices for the smaller profit on the orders of the large consumers. It may be thought that the merchant can guard himself against loss by making time or quantity contracts with colliery owners ; and this of course he does. But the chances of weather and excessive demand enter largely into the possibilities of delivery by land and still more by water, whilst the same disposition to make the best of a bargain is present alike with coal owners and retailers. When hard pressed, therefore, the retailer has, at any price, to meet demand from unusual sources.

In the case of sea-borne coal, fluctuations in wholesale prices are much greater than in land-borne coal, one reason being the dependence of the supply upon weather conditions at all times of the year, and upon the competition of foreign trade, which also affects the rate of freight, — a form of competition absent, of course, in land-borne coal. I have known the wholesale or market price of sea-borne coal to vary as much as 2 *s.* per ton, whilst retail prices have remained steady. The retail prices are determined by the combined influence of the wholesale prices both of land-borne and sea-borne coal, land-borne coal being for retail purposes much the larger in quantity and steadier in value ; the sea-borne price has much less influence upon the general selling price, and fluctuations in the sea-borne price may take place even to a greater extent than that I have named without materially affecting the retail price.

One of the peculiarities of wholesale prices of sea-borne house coal from the northeastern ports of England is, that they are still subject to deductions for reasons which were cogent when coal was sold by the score of chaldrons, but which have no relevancy now ; and still other deductions which were made on the first introduction of steam colliers to induce merchants to clear the vessels rapidly, but which have no longer any such meaning.

Mr. Lecky, in his "Democracy and Liberty," points out how remissions of indirect taxes often stick by the way in the pockets of traders. A capital illustration of his remark was afforded by the remission of the London coal dues. When these dues were

abolished people naturally looked for an immediate reduction of 1 *s.* per ton in the price of coal, but as a rule nothing of the kind took place. The dues were taken off at a definite time known long beforehand. London is a most important market, but it is not the coal owners' only market by any means. Trade was brisk all over England and the Continent. To take full advantage of the remission, merchants in London lowered their stocks, but the coal owners felt little or no inconvenience from the temporary lull in the London demand. They filled up their customers' stores elsewhere at good prices, the general condition of trade allowing this to be easily done. Immediately after the remission, stocks being low, the London demand became abnormally brisk, and up went the price. It was only coal waiting to enter the port of London and remainders of contracts therefore that were affected by the remission of the duty. Had the remission come about at a time of very depressed trade, the result would of course have been different. Stocks could not have been so easily lowered in London, and other markets would not have afforded the same relief to the coal owners.

A very marked effect upon retail prices has been seen of late years to result from the increasing tendency to invest large amounts of capital in businesses hitherto left to comparatively small dealers. The custom is American in its origin, but it was stimulated in England by the coöperative movement, — a movement which has only shown any large amount of success as retail or distributing agencies in those cases where the stores have been established on a large scale with comparatively wealthy and educated men to supply the capital required and direct the management in the name of coöperation, but really as joint-stock proprietors of American stores. The smaller distributing stores meet with much the same fate as small businesses; for whatever advantages they may have over tradesmen in starting with an assured number of interested customers is more than counterbalanced by the extra difficulties of divided and generally less competent management. The result to the public has been beneficial inasmuch as it has been a lessening of the cost of distribution and some better adjustment of the relation of retail to

wholesale prices, — a result marked chiefly however in articles of luxury. Retail prices of articles in daily demand have, I believe, been very little affected. It may be that in the not very distant future the word "coöperative" will be dropped, or will quite lose its meaning in relation to large distributing businesses.

In conclusion, the relation of wholesale to retail prices is of course definite within certain limits. The retailer cannot sell below cost price and generally speaking he will not be able to obtain much higher prices than are customary in his trade in his own neighborhood for any length of time. But the variations of retail prices are wider, even in articles of prime necessity, than might be at first supposed, and these arise from a variety of causes illustrating the influence of social customs and human passions in modifying economic acts. The social grade of customers, real or imagined, status of neighborhood, rent, artistic display, the art of advertising, ability to judge the disposition of customers, effrontery, cunning, fraud, — all enter at times into the determination of prices charged.

The academic contempt for traders is justified by the necessary effect of the continuous exercise of cunning upon the character; but in the pressure of competition, where cunning is almost as necessary for self-preservation in the trading man as it is in the fox, the quality must be recognized as essential, and we should guard ourselves against giving it too great relative importance, existing as it often does in the same man along with higher qualities exercised in other than the trading relationships of life. We must remember, too, that the same quality is present in the higher and more important branches of trade. The banker's profession is perhaps the highest form of industrial occupation, but in asking the current rate of interest on undoubted security and getting it, because the borrower is ignorant of the fact that the same banker is lending where pressed by competition at a lower rate, the banker is really doing what the butcher and the grocer and the coal merchant do under similar circumstances. "As a nail sticketh fast between the joinings of the stones, so doth sin stick fast between

buying and selling," says Jesus, son of Sirach. It is only a question of degree varying from fair industrial wariness to palpable fraud. And though a very definite line might be drawn between acts allowable and not allowable according to high ethical standards, when the rule came to be applied to the actual conduct of business it would be found that casuistry would have to be resorted to to an extent that would make the line of no absolute but only of relative value. This is not defending the crooked ways of trade, — far from it. But the complexity of man's nature and of society must be acknowledged and allowed for in any cool judgment of the necessities and expediencies of industrial action.

2. Variation in the Prices of Agricultural Products [1]

The course of agricultural prices has varied greatly from the middle of the past century down to its close. From 1849 to 1872 the general course was upward. From 1872 to 1894 the general course was still more rapidly downward. Since 1894 there has been a marked recovery not only throughout the United States but throughout the greater portion of the world, so that the level of prices has reacted very favorably upon the progress of production of farm products.

The table on the following page gives, in the first column, the crop year, in the second the country's production of corn in bushels, in the third the farm price as reported in December of the year named, in the fourth and fifth similar particulars for wheat, and in the sixth and seventh the cotton crop, as estimated by the Department of Agriculture, and the yearly average prices of low Middling Uplands in the New York markets. An asterisk (*) affixed to the price denotes a change in the same direction as in the production, the change in other cases being opposite.

The effects of variation in prices upon movements of capital and labor are slow but certain. Whenever one farm product of first rank rises higher than others, so as to put it on an unusual

[1] From Report of the Industrial Commission (Final Report), XIX, 140–142.

Production and Prices of Three Agricultural Staples since 1883

(From the *Crop Reporter*)

Crop Year	Indian Corn		Wheat		Cotton	
	Produced in United States	Price per Bushel	Produced in United States	Price per Bushel	Produced in United States	Average Price per Pound in New York
	Bushels	*Cents*	*Bushels*	*Cents*	*Bales*	*Cents*
1883	1,551,000,000	42.4	421,000,000	91.1	5,701,000	$10\frac{5}{8}$
1884	1,796,000,000	35.7	513,000,000	64.5	*5,682,000	$10\frac{5}{16}$
1885	1,936,000,000	32.8	357,000,000	77.1	6,575,000	9
1886	1,665,000,000	36.6	457,000,000	68.7	6,254,000	$9\frac{1}{2}$
1887	1,456,000,000	44.4	456,000,000	*68.1	*7,020,000	$9\frac{13}{16}$
1888	1,988,000,000	34.1	416,000,000	92.6	6,941,000	10
1889	2,113,000,000	28.3	491,000,000	69.8	*7,473,000	$10\frac{1}{16}$
1890	1,490,000,000	50.6	399,000,000	83.8	8,653,000	$8\frac{5}{8}$
1891	2,060,000,000	40.6	612,000,000	*83.9	9,035,000	$7\frac{1}{4}$
1892	1,628,000,000	*39.4	516,000,000	*62.4	6,700,000	8
1893	1,619,000,000	*36.5	396,000,000	*53.8	7,493,000	$7\frac{1}{4}$
1894	1,213,000,000	45.7	460,000,000	49.1	9,476,000	6
1895	2,151,000,000	25.3	467,000,000	*50.9	7,161,000	$7\frac{3}{4}$
1896	2,284,000,000	21.5	428,000,000	72.6	8,533,000	$7\frac{5}{16}$
1897	1,903,000,000	26.3	530,000,000	*80.8	10,898,000	$5\frac{13}{16}$
1898	1,924,000,000	*28.7	675,000,000	58.2	11,189,000	$5\frac{9}{16}$
1899	2,078,000,000	*30.3	547,000,000	58.4	9,143,000	$8\frac{3}{4}$
1900	2,105,000,000	*35.7	522,000,000	62.0	10,383,422	9

level of value, the effect is to attract labor and capital in that direction for the time being, to the sacrifice of other phases of farming. This process goes on slowly, but, in the long run, surely. The high prices of meat and corn have given an unusual prominence to the growing of corn and live stock throughout the Central States, and made of that cereal a still more fundamental crop. It has also somewhat reduced the primacy of wheat growing. This applies especially to what is known as the corn-belt territory of the United States.

Throughout the spring-wheat belt the high price of butter and the low price of wheat which prevailed about 1890 led to the development of dairying throughout Minnesota and Wisconsin, as well as to the growth of such crops as potatoes, fruits, and the like, so that these localities have

become highly specialized, primarily from the fact that change of prices gave very different direction to the whole system of farming.

Variation in prices of farm products changes the purchasing power of the whole farming population whose crops are affected thereby. As pointed out elsewhere, the cotton crop of 1900–1901 increased the income of the South by $131,000,000 over the amount received for the crop of 1899–1900. A rural section in such a position exerts an influence upon the prosperity of the country in every phase of labor and investment outside of its own. The country as a whole has an important interest in the maintenance of a fairly high level of agricultural prices.

Another effect of variation in prices is seen in the shifting of the location of a particular agricultural industry from the less favored to the more favored districts. The influence of the fall of prices of cotton resulted in such relocation of cotton-growing territory in two different areas: (1) It drove the cotton growing out of the hill country into the lowlands along rivers and streams east of the Mississippi; (2) a still greater change was the shifting of the cotton-growing area toward the Southwest, until one third of the whole cotton crop came from Texas alone. The actual seat of cotton production was forced in the direction of the new and unexhausted lands as a result of the necessity of producing at a lower cost. In 1896–1897 Texas raised less than one fourth of the total cotton crop, the other three fourths having been produced in the other Gulf and the Atlantic States. In 1900–1901 the crop of Texas was larger than that of either of the other sections, being 3,809,000 bales, or 37.6 per cent, for Texas alone, including Indian Territory, 2,781,000 bales for the other Gulf States, and 3,793,000 bales for the Atlantic States, including Georgia, Alabama, and Kentucky, out of a total crop of 10,383,000 bales.

It is a quite general principle in the variation of prices that the change in the price is greater than the change in the supply, — that is, a reduction of supply of 5 per cent may cause a rise of, say, 10 per cent in price, and, vice versa, an increase

in supply of 5 per cent results in a decrease of, say, 10 per cent in price.[1]

The causes for variation in the prices of cereals in the United States must be sought in the world's supply of breadstuffs from year to year, in its relation to the demand. In this connection the European crop is the principal factor. A shortage there sends

[1] As early as 1696 an English writer, Gregory King, computed that a deficiency in the wheat harvest might raise the price of wheat in the following proportions:

Deficiency	Rise of Price
1 tenth	3 tenths
2 tenths	8 "
3 "	16 "
4 "	28 "
5 "	45 "

In the United States it has frequently happened that large crops have had a smaller value than small crops. This is shown by the following table:

Calendar Year	Wheat — Total —			Corn — Total —		
	Value per Bushel Dec. 1	Production	Farm Value Dec. 1	Value per Bushel Dec. 1	Production	Farm Value Dec. 1
	Cents		*Dollars*	*Cents*		*Dollars*
1880	95.1	498,549,868	474,201,850	39.6	1,717,434,543	679,714,499
1881	119.2	383,280,080	456,880,427	63.6	1,194,916,000	759,482,170
1882	88.4	504,185,470	445,602,125	48.5	1,617,025,100	783,867,175
1883	91.1	421,086,160	383,649,272	42.4	1,551,066,895	658,051,485
1884	64.5	512,765,000	330,862,260	35.7	1,795,528,000	640,735,500
1885	77.1	357,112,000	275,320,390	32.8	1,936,176,000	635,674,630
1886	68.7	457,218,000	314,226,020	36.6	1,665,441,000	610,311,000
1887	68.1	456,329,000	310,612,960	44.4	1,456,161,000	646,106,770
1888	92.6	415,868,000	385,248,030	34.1	1,987,790,000	677,561,580
1889	69.8	490,560,000	342,491,707	28.3	2,112,892,000	597,918,829
1890	83.8	399,262,000	334,773,678	50.6	1,489,970,000	754,433,451
1891	83.9	611,780,000	513,472,711	40.6	2,060,154,000	836,439,228
1892	62.4	515,949,000	322,111,881	39.4	1,628,464,000	642,146,630
1893	53.8	396,131,725	213,171,381	36.5	1,619,496,131	591,625,627
1894	49.1	460,267,416	225,902,025	45.7	1,212,770,052	554,719,162
1895	50.9	467,102,947	237,938,998	25.3	2,151,138,580	544,985,534
1896	72.6	427,684,346	310,602,539	21.5	2,283,875,165	491,006,967
1897	80.8	530,149,168	428,547,121	26.3	1,902,967,933	501,072,952
1898	58.2	675,148,705	392,770,320	28.7	1,924,184,660	552,023,428
1899	58.4	547,303,846	319,545,259	30.3	2,078,143,933	629,210,110
1900	61.9	522,229,505	323,525,177	35.7	2,105,102,516	751,220,034
1901	62.4	748,460,218	467,350,156	60.5	1,522,519,891	921,555,768
1902	63.0	670,063,008	422,224,117	40.3	2,523,648,312	1,017,017,349
1903	69.5	637,821,835	443,024,826	42.5	2,244,176,925	952,868,801
1904	92.4	552,399,517	510,489,874	44.1	2,467,480,934	1,087,461,440
1905	74.8	692,979,489	518,372,727			

— Ed.

up the world price ; an abundance depresses it with greater certainty than is the case with any other factor in the world's cereal situation. The demands of the deficit wheat countries are consequently the chief influence in fixing the price at which the American surplus shall be disposed of. That demand varies with the European harvests, — that is, according to the size of the deficit.

The size of the surplus influences both the domestic and the export prices.

The necessity of the United States to dispose of its surplus in the European markets without any other outlet has led wheat growers of the Northwest to advocate, with much unanimity, the importance of finding a larger market in the Orient, so that there may be competition with Europe in the demand for our surplus.

3. The Influence of Speculation upon Prices [1]

The directive influence of speculation is its service to society in general, and its risk-bearing function its service to trade as such. Since its directive control is exerted through prices, it will be well first to examine the influence of speculation on prices, and return in another place to the assumption of speculative risks.

In the first place it is desirable to dispose of a more or less prevalent idea that speculative prices are determined "regardless of the law of demand and supply." Such an idea is based on a complete misconception of the nature of value. The more free the competition between buyers and sellers, the more minutely is price regulated by demand and supply, and nowhere is competition more free than on the exchange. It is especially strange to hear this charge brought forward as if an infraction of the law of supply and demand was cause for criminal indictment. Even if it were true, that under complete competition on the exchanges prices were determined in some other way,

[1] By Henry C. Emery. Reprinted, with the consent of the author and the Columbia University Press, from Speculation on the Stock and Produce Exchanges of the United States. In Columbia University Studies in History, Economics, and Public Law, Vol. VII [New York, 1896].

it would only remain to modify the statement of the law of value, not necessarily to disturb the facts. There are plenty of instances outside the exchanges where prices are determined by other factors than demand and supply.

This notion is probably due to what may be called the objective idea of value, that is, the idea that value may be determined by certain physical facts independently of individual feelings. Thus it is supposed that there is a physical supply of any commodity of an ascertainable amount, and at the same time a sufficiently definite demand on the part of the consumers of the commodity, and that these two factors must determine the value of the commodity.[1] It should be necessary only to state this proposition to show its error, and yet there are many who cannot grasp the idea of a subjective determination of value. They cannot see that the total physical supply has nothing to do with the value at the moment, but only that part of it which is available for the market under prevailing conditions. That part of the supply which does affect value varies according to the temporary opinions of the holders as to the market prospects for some later time. So, too, the demand for commodities is just as little an objective, definite affair. It is something purely subjective, dependent in the same way on the opinions of the persons concerned, regarding not only present but future conditions.[2]

Prices on the exchanges, however, are (and must be) determined by the existing demand and supply. But the existing

[1] It would be possible to cite many instances of this feeling in regard to value. The reports and speeches of the advocates of "anti-option" legislation in Congress are full of it. Even writers of standing are not free from confusion on this point. Eschenbach (Zur Börsenreform, p. 33 [Berlin, 1892]) complains that speculative prices are determined, not by *Vorrath und Bedarf*, but by *Angebot und Nachfrage*. Cohn, "Ueber das Börsenspiel," Schmoller's Jahrbuch, XIX, 44, says of this idea: "Diese vermeintlich neue Weisheit kommt darauf hinaus, dass sie an die Stelle des denkenden Menschen die todte Sache setzt, an die Stelle des Schützen das Geschoss."

[2] Compare the trenchant remarks of Professor Cohn, in the article just cited, on this idea of value, p. 44 *et seq.* Cohn points out that the price of potatoes or any other commodity in which there is no speculation is equally affected by the anticipation of future conditions of demand and supply, so far as these are known. Cf. also Brückner, Der Differenzhandel, p. 52.

demand and supply are both speculative, and depend for their strength on the conditions in other markets and on the expected conditions of the future. It is in this way that distant and future demand and supply affect prices, by affecting the speculative demand and supply here and now, and it is only in so far as they do determine the speculative market of the moment that they have any influence on price.

The speculative demand and supply are just as real as any other, and are expressed in genuine offers to buy and sell goods. It may be to buy or sell either present goods or future goods, or, in other words, goods either for immediate delivery or for future delivery. They are at the same time estimates of what the future market is to be. It may be expressed by saying that the existing market for future goods is an attempt to forecast the future market for (then) existing goods. If a distinction is made between utility and value by considering the value of a commodity as an estimate of what its utility will be, a further distinction may perhaps be made by considering the price of a "future" as an estimate of what the value of the commodity will be. It is an estimate of an estimate. The speculator makes his offers to buy and sell entirely on that estimate of future values. To be more specific, he trades at the moment in May wheat, or July wheat, or September wheat, according to his estimate of spot prices in the following May, or July, or September.[1]

Seen in this light, it is entirely natural that men should "make" prices according to their opinions, and the charge that the exchanges are "price factories" loses all its odium. It should always be borne in mind that the service of speculation comes in its "price-making power."

Under these conditions the closest scrutiny of all the factors that may influence future prices is of essential importance. The success of a speculator depends on the accuracy of his

[1] This must be true in the long run even where the speculator expects to complete his operation before the month of delivery. If he expects the price of a given option to rise or fall within a given time, it will ordinarily be because of conditions which would advance or depress the spot price of that particular future month.

estimates, and it follows that where we find organized speculation we find the best perfected facilities for securing early and accurate information. This is one of the striking merits of the speculative system. In any business, knowledge and foresight are the chief requisites of success.[1] Nowhere do we find such strenuous efforts in this direction as among large speculators. It may be said with scarcely an exception that every successful operator in the stock or grain market has been distinguished by his unusual success in securing accurate information in advance of his competitors. The old story of how Rothschild watched the battle of Waterloo and reached London in time to make large purchases in the funds before the news became public, is typical of the successful operator everywhere. It is also true that the speculator has often been equally marked by his ability to mislead his rivals in regard to what he has learned. His real opinion, however, is registered on prices by his purchases or sales. In the meantime it should be borne in mind that every increase in knowledge of future events is, in so far, a gain to the public as well as to the individual.

Every event of any nature whatsoever is eagerly watched for and its effects discounted. Droughts in Kansas or rains in Argentina are noted at once in the markets of New York and Liverpool. New inventions, new discoveries, changes in freight rates, economic legislation, political complications, business failures, strikes, riots, storms, in any part of the world, are quick to affect prices on both stock and produce exchanges.

Events are anticipated and exert their influence before they arrive. It is often surprising to see how absolutely without effect is the final occurrence of an event of importance, provided it has been expected. It is all epitomized in the familiar saying that "Wall Street discounts everything."

With this body of keen experts, striving by the use of private wires, special agents, and every other means, to discover and foresee every event bearing on values, speculation has been

[1] As Professor Hadley well says (Economics, p. 113): "The success or failure of a man engaged in manufacturing, in transportation, or in agriculture, depends more upon his skill as a prophet than upon his industry as a producer."

well defined as the struggle of well-equipped intelligence against the rough power of chance. Just in so far as it meets and predicts changes of value it is successful for the individual and fulfills its function in business life. But its power is strictly limited. It may provide a special class to assume the risks, but it cannot do away with risks altogether. There are physical and social changes which are impossible of prediction and must remain so. Speculation tends to reduce these to a minimum, and perfect speculation would succeed in predicting all future conditions, that is, would destroy its own *raison d'être*. In the meantime it is the many chances of gain from uncertain developments that maintain the speculative class.[1]

It is customary to attribute any price which is unfavorable to a particular class to the machinations of speculators. In this country speculation is charged with the responsibility for a large part of the fall in prices of agricultural products since the complete adoption of speculative methods a quarter of a century ago. Its tendency is supposed to be always towards a depression of price. Under other circumstances, however, it is blamed for always enhancing prices above the "natural" rate.[2] To the person making either of these claims it is perhaps a sufficient answer to oppose the other claim, and probably the same person who will insist that speculation reduces the price of wheat will be ready on another occasion to applaud the critic who asserts that speculation gives a "high fictitious value" to "intrinsically worthless" stocks. The one view is a

[1] "Der Sporn des Ungewissen mit der Lockung des Gewinns ist es, welcher das Getriebe der Spekulation im Gange hält. Und doch eines Ungewissen, welches zu überwinden Tausende von unternehmenden Köpfen sich anstrengen." Cohn, Ueber das Börsenspiel, *loc. cit.*, p. 46.

[2] "It is not so many years ago since a large and representative meeting of western American farmers passed a resolution against options, on the score that they tended to unfairly reduce the price of wheat, and it was just three weeks after that meeting that a convention of the National Association of American Millers, attended by some five hundred members, was held in Minneapolis, and passed a resolution condemning options, on the ground that they unfairly raised the price of wheat." Quoted in *Bradstreet's*, August 22, 1896, p. 542. Cf. also Cohn, "Zur Börsenreform" in *Deutsche Rundschau*, November, 1891, p. 211 *et seq.*, reprinted in Beiträge zur deutschen Börsenreform [Leipzig, 1895].

contradiction of the other. If any tendency is inherent in the system, it must show itself equally whether the subject of speculation is stock or produce. The methods on the stock exchange and on the produce exchange are not essentially different. Short selling is rife on both.

This question as to the effect of speculation in depressing prices, which has been the chief argument of the anti-optionists in Congress, has been treated somewhat fully by the writer in another place,[1] and calls for only a brief summary here. The familiar argument is that short selling is a selling of products that do not exist, in addition to those that do, and so furnishes a corresponding increase of supply, which necessarily depresses prices; and figures representing enormous sales are brought forward as statistical proof. These sales, however, are also purchases, and the question of their amount is of no importance. They represent a speculative demand as well as a speculative supply, and the real question is whether the speculative forces on the short side are stronger than those on the long side of the market, and whether the speculative supply or demand is warranted by actual conditions. It is the fact that they sometimes are not, which gives rise to the idea that speculative prices are "independent of demand and supply." The question of the depressing effects of speculation on prices cannot be decided by a comparison of prices before and after the advent of speculation; for the causes influencing prices are too many to permit of tracing the effects of a single cause easily. That there has been a great fall in prices in the past few years no one will deny, but there has been cheapening of transportation and entirely new competition in the markets of the world, due to the exports of Russia and Argentina. Furthermore, since speculation began thirty years ago, there are several periods of high prices which may as justly be attributed to it as the low prices at other times. A comparison of the degree of depression with the amount of future sales shows that increased speculation has always accompanied higher prices. That is what any one familiar with the market would expect. In this case

[1] "Legislation against Futures," *Political Science Quarterly*, March, 1895.

the increase in speculation is rather the effect than the cause of advancing price; but the fact is damaging to the argument that falling prices are due to speculation. The same facts apply in the case of the opposite theory that speculation necessarily raises prices. It may raise or lower prices; but so long as there is strong speculation on both sides of the market (and there always will be) there is no necessary tendency for it to do either. Furthermore any effect on price in either direction, which is not based on actual conditions, is necessarily temporary for the same reason.

What then is the effect of speculation on prices? Primarily, as has been shown, it acts to concentrate in a single market all the factors influencing prices. In this way a single price is fixed for the whole world. By means of arbitrage transactions former differences of price in different markets have been leveled. Of this there can be no doubt. The same should be true in regard to differences of time as well as of place. Since a great change in either the demand or supply of any commodity is less unexpected, it has far less influence on price, when it finally arrives, than it would have under a nonspeculative system. This is both because an excited market due to unexpected events always registers extreme prices, and also because the anticipation of changes in the market affects the immediate price. On the other hand, every slight change in the demand or supply of a commodity has more influence than ever before. The more perfect the speculative market becomes, the more sensitive it is to every change in conditions. An "active" stock, for example, changes prices many times in an hour. The resultant of these two tendencies of the speculative market would seem to be a state of less violent but more frequent fluctuations of price. This is the ordinary statement in regard to the matter. The contrast between the two systems has been likened to the difference between the countless waves of the sea in fair weather and its billows in a storm.

Perhaps the most potent influence in preventing wide fluctuations is the much maligned short seller. It is he who keeps prices down by his short sales, and then keeps them strong by his covering purchases. This is especially true in the case of

inflation followed by panic. If it were not for strong short selling when the market becomes inflated, prices might rise to almost any extent before the final crash. Now the rise tends to be checked by the efforts of shrewd operators to take advantage of the inflation. On the other hand, when prices begin to tumble, they are kept from going as low as they otherwise would by the purchases which the shorts have to make to cover their contracts. Thus prices at both ends of a panic are less extreme than they would be without short selling. Under organized speculation both the sanguine and the skeptical elements are duly represented. Every decided rise or fall in values is fought by one party or the other. Compare the situation during a real estate boom. Here only the sanguine affect the price on the rise, and only the gloomy on the fall. At one end prices are more recklessly inflated, and at the other more needlessly depressed, than would be possible in an organized speculative market.

These are strong factors making for a condition of more steady prices. Against them must in fairness be set the possibility of increased fluctuation by reason of speculation. While the participation of speculators in the market increases the chances of an intelligent forecast of coming events, it also affords the opportunity for panic influence. The ease with which business is done, and especially the facility for trading on insufficient capital, occasionally precipitate movements in price which are due solely to the unreasoning excitement of a crowd. There are also occasional movements of a different kind, due to well planned and executed "manipulation." Most striking of these is the successful corner. So, too, any temporary difficulty of either the bulls or the bears, due perhaps to the necessity of immediate delivery, or perhaps to a concentration of orders in the market of one particular kind, may create a sudden fluctuation one way or the other.[1]

[1] For example, on March 6, 1894, the price of the Sugar Trust certificates advanced twelve points in less than an hour, and almost at once reacted ten points. Such fluctuations have no relation to actual conditions. Probably the flurry was due to a concentration of buying orders, increased by "stop loss orders" as the price rose, with no selling orders for the moment. This at least was the interpretation of the press.

It is of the greatest importance, however, to distinguish the frequency of fluctuation from its extent. It is the whole tendency of speculation to cause a ceaseless fluctuation within certain limits, but it is no less a tendency of speculation to narrow those limits. Those cases which result in extreme prices of a fictitious kind are rare and in any case of short duration.

Statistics regarding the influence of speculation on prices must be regarded with due caution. We may compare the prices of some commodity during a speculative and a nonspeculative period, or we may compare the course to-day of prices of a speculative and nonspeculative commodity or security. In the first case it is never quite possible to tell what other changes besides the introduction of speculation may have been of influence; in the second case it is difficult to weigh the various influences, other than the presence or absence of speculation, which affect the prices of the two commodities. For example, it is sometimes said that wheat fluctuates in value more than many nonspeculative commodities; but this is not because of speculation, but because of the inherent uncertainty of its supply. On the other hand, corn, in the long run, fluctuates more than wheat, but this is not due to the smaller degree of speculation in the case of corn. It is grown in fewer countries than wheat, and is not in such steady demand for human food.[1] The stocks which are chiefly speculated in are often most irregular in their price movements, but it is the natural fluctuation in value which induces the speculation, not the speculation which causes the fluctuation.

For these reasons statistics can hardly be used to furnish either proof or disproof of the foregoing estimate of the effect of speculation. Any general opinion on the subject must rest rather upon its own reasonableness than upon statistical verification. With the necessity of caution in interpretation duly recognized, it is possible to make some statistical comparisons which, if not of complete significance, are at least of interest. A comparison not infrequently made is that of the wide fluctuation

[1] The fluctuations of corn and wheat prices for a series of years are given each year by the secretary of the Chicago Board of Trade in his annual report.

in the price of grain in the Middle Ages with similar fluctuations to-day. For example, wheat in London sold in 1335 at 10 *s.* per bushel, and in 1336 at 10 *d.*[1] Such figures, however, throw little light on the subject in hand. More interesting is a comparison between periods in this country. Speculation in cotton began about 1870. Following are the highest and lowest prices of cotton per pound in New York for the decades 1821–1830, 1851–1860, and 1885–1894, with the percentage of fluctuation from the highest price.[2] The grade quoted is the same throughout each decade, and a change of grade between the decades does not affect the comparison of fluctuations.

Year	Low	High	Per Cent	Year	Low	High	Per Cent	Year	Low	High	Per Cent
1821	$0.11	$0.20	45.	1851	$0.08⅜	$0.15	41.7	1885	$0.09 7/10	$0.10 7/10	9.3
1822	.10	.18	44.4	1852	.08½	.11⅜	25.3	1886	.09⅛	.10	8.8
1823	.09	.17	47.0	1853	.09⅜	.11½	17.0	1887	.09⅛	.11⅜	19.8
1824	.11½	.18	36.1	1854	.10	.11¾	14.9	1888	.09½	.11	13.6
1825	.12	.30	60.0	1855	.08¼	.13	34.6	1889	.09 1/16	.11½	15.7
1826	.09	.17½	48.6	1856	.09	.11⅝	22.6	1890	.10¼	.12⅝	18.8
1827	.08¾	.11½	23.9	1857	.11⅝	.15¾	26.1	1891	.07 13/16	.10⅜	25.3
1828	.08¼	.13	36.5	1858	.08⅞	.15¾	43.6	1892	.06 1/16	.08¾	29.3
1829	.08	.11⅛	30.4	1859	.11	.13⅜	17.7	1893	.07 5/16	.10	28.1
1830	.08	.12½	36.0	1860	.10½	.11⅞	10.6	1894	.06⅝	.08 9/16	19.6

The above figures show constantly diminishing fluctuations. The average per cent of fluctuation for the three periods is, for 1821–1830, 40.79 per cent; for 1851–1860, 25.41 per cent; for 1885–1894, 18.83 per cent. The extreme fluctuations for any one year in the three decades were respectively 48.6 per cent, 43.6 per cent, and 29.3 per cent. The average annual fluctuation was lessened more between the first and second periods taken (37.7 per cent) than between the second and third (25.9 per cent). That is, while the speculative period

[1] Marshall, Principles of Economics, p. 165.

[2] These figures (with the exception of the percentages, which are separately calculated) are taken from "Production and Prices of Cotton for 100 Years," United States Department of Agriculture, 1895, Miscellaneous Bulletin, No. 9.

The decade 1821–1830 is the first for which highest and lowest quotations are given.

(1885–1894) shows narrower fluctuations than the period 1851–1860, there was even greater improvement between this period and the decade 1821–1830.

For grain such accurate statistics for early periods are not available. A comparison, however, may be made of the annual fluctuations since the adoption of the "future" system (say 1865). Following are the highest and lowest prices of wheat at Chicago for thirty-one years, with per cent of fluctuation from the highest price:[1]

Year	Low	High	Per Cent	Year	Low	High	Per Cent
1865	$0.85	$1.55	45.1	1881	$0.95⅜	$1.43¼	33.4
1866	.78	2.03	61.5	1882	.91⅛	1.40	34.9
1867	1.55	2.85	45.6	1883	.90	1.13½	20.7
1868	1.04½	2.20	52.5	1884	.69	.96	28.1
1869	.76½	2.47	69.0	1885	.73⅜	.91¾	20.0
1870	.73¼	1.31½	44.7	1886	.69⅜	.84¾	18.3
1871	.99½	1.32	24.6	1887	.66⅜	.94¾	29.7
1872	1.01	1.61	37.3	1888	.71⅛	2.00	64.4
1873	.89	1.46	39.0	1889	.75½	1.08¾	30.6
1874	.81½	1.28	36.3	1890	.74¼	1.08¼	31.4
1875	.83¼	1.30½	36.2	1891	.84¾	1.16	26.9
1876	.83	1.26¾	34.5	1892	.69¼	.91¾	24.5
1877	1.01½	1.76½	42.5	1893	.54¼	.85	39.7
1878	.77	1.14	32.5	1894	.50⅜	.63¾	21.0
1879	.81⅝	1.33½	36.2	1895	.48⅞	.81½	40.0
1880	.86½	1.32	35.2				

Dividing the whole time into two periods of sixteen and fifteen years respectively, as in the table, it appears at once that the fluctuation was decidedly less in the second period. From 1865 to 1880 the annual fluctuation was less than 35 per cent in only three cases, while from 1881 to 1895 the annual fluctuation was less than 35 per cent in all but three years. In the first period the fluctuation was less than 30 per cent in one year only; in the second period it was less than 30 per cent in eight years.

Nevertheless the fluctuations under a speculative system are still large. Wide fluctuations from year to year are inevitable,

[1] Figures from the *Report of the Chicago Board of Trade*, 1895, p. xxxvi.

whether speculation prevails or not, because crops vary greatly, and in the end this variation of supply must have its effect. Within the limits of a single year, however, speculation should show a leveling influence. Figures of the highest and lowest prices in each year may fail to show the general tendency of speculation in this direction because of the temporary extreme quotations which arise from abnormal speculation. In the above table it will be seen that the fluctuation in 1888 was 64.4 per cent, the price rising to $2.00 per bushel. This was due to the corner at the end of September of that year. Similar occurrences on a smaller scale account for the degree of fluctuation in some other years. Such price movements are of short duration, and their presence in a price table may give a false appearance of similarity between the fluctuations of earlier and of recent years. A fairer method perhaps would be that of monthly averages. Professor Bemis has made some tables of interest in this connection,[1] one of which he summarizes as follows:

Monthly Average per Bushel No. 2 Spring Wheat, at Chicago, 1885–1892

September . . 83.9 cts.	January . . . 82.8 cts.	May . . . . 89.2 cts.
October . . . 87.6 "	February . . 83. 4 "	June . . . . 86.6 "
November . . 88.2 "	March . . . 82.7 "	July . . . . 82.7 "
December . . 85.4 "	April . . . . 84.5 "	August . . . 83.8 "

"The figures tell their own story. They not only show that there is no fall in prices at harvest, when we should most expect it, but they reveal a remarkable evenness of prices between all the months over a series of years."

The following table is a comparison of average monthly prices of winter wheat in New York[2] for four years before and four years after the advent of speculation.

[1] See "The Discontent of the Farmer," *Journal of Political Economy*, March, 1893.

[2] For the earlier period figures are taken from the reports of the New York Chamber of Commerce, 1857–1859, and for the later period from the annual reports of the Produce Exchange.

	1855–1856	1856–1857	1857–1858	1858–1859		1890	1891	1892	1893
July . .	$2.07½	$1.55	$1.75	$1.04	January .	$0.86⅛	$1.05¾	$1.02⅜	$0.79½
August .	1.80	1.57	1.55	1.15¼	February .	.85¼	1.10 1/16	1.04⅝	.79 3/16
September	1.85	1.55	1.40	1.18	March . .	.87¾	1.13⅜	1.01	.75⅞
October .	1.93	1.56	1.17	1.11½	April . .	.93 3/16	1.19 5/16	.98½	.76⅜
November	2.08	1.55	1.19	1.18	May . .	.98¾	1.13⅞	.96½	.77⅜
December	2.05	1.57	1.17	1.18¼	June . .	.94⅛	1.07 3/16	.91 1/16	.72 1/16
January .	1.95	1.57	1.12	1.25½	July . .	.93 3/16	.99⅞	.86 3/16	.71 1/16
February .	1.83	1.55	1.17	1.36½	August .	1.04	1.05⅞	.82⅛	.68
March . .	1.70	1.48	1.15	1.48	September	1.01 5/16	1.03 5/16	.78¾	.72⅛
April . .	1.64	1.45	1.17	1.43¾	October .	1.06⅛	1.04¼	.77 3/16	.69⅛
May . .	1.60	1.65	1.04	1.65	November	1.02¾	1.05 3/16	.75⅞	.66⅝
June . .	1.45	1.70	1.02	1.55¼	December	1.04 1/16	1.05 7/16	.76½	.67⅛

An examination of these tables shows the marked differences in the amount of annual fluctuations in earlier years ; but reveals in the main a smaller amount of fluctuation in the second period. For eight months in 1856–1857, a very unusual year, the average monthly price varied only from $1.55 to $1.57, and then from April to June changed from $1.45 to $1.70. The range in average monthly prices for each year, measured in per cent of the highest price, was :

1855–1856	30.0 per cent	1890	19.6 per cent
1856–1857	14.7 "	1891	16.3 "
1857–1858	41.7 "	1892	27.4 "
1858–1859	37.0 "	1893	15.7 "

The widest margins between any two successive months were :

1855–1856	13.2 per cent	(July–August)
1856–1857	12.1 "	(April–May)
1857–1858	16.4 "	(September–October)
1858–1859	12.9 "	(April–May)
1890	10.4 "	(July–August)
1891	7.36 "	(June–July)
1892	6.13 "	(June–July)
1893	6.86 "	(May–June)

The foregoing figures of price variations cannot, however, be accepted as an entirely accurate indication of the influence of speculation. In the first place, they are summarized in the rough form of averages, and do not pretend to be more than fragmentary. Incomplete as they are in this respect, however, they do show a pretty uniform tendency toward a lessening of price fluctuations. In the second place, it is impossible to attribute a change of this nature unmistakably to speculation. The course of the price movements of to-day is a joint result of a joint development. The increased facilities of transportation and communication, the improvements in trade methods, and the speculative system have all developed together. The result of all these forces working in concert is toward smaller variations in prices, but how much of the result can be attributed to any one cause it is perhaps fruitless to discuss.

Some statistics of fluctuation were given in the report of the German Commission of 1893, which have been cited by Professor Cohn as of significance in regard to this question. In the matter of produce, however, comparisons were not made. In the case of securities, two speculative and three nonspeculative stocks were taken for comparison, and the securities in which speculation did not occur showed greater ups and downs of price than even the extreme speculative stock (*Spielpapier*) taken for comparison. Such a comparison, however, is of doubtful value even if made by one who is perfectly familiar with the conditions affecting the value of each stock. It would be impracticable to attempt any such contrast in this place. Accurate figures of the real value of unlisted securities in the United States from time to time would require the most careful inquiry as to actual sales. Even then the complex conditions affecting the value of each security would make the results worthless as an indication of the effect of speculation on prices.

Strong evidence of smaller fluctuations under the speculative system is found in the smaller margin of profits of traders, and still more in the existing method of quotation. Before the war, cotton was quoted only within a quarter or possibly an eighth of a cent per pound. To-day cotton quotations are in hundredths

of a cent. Wheat, formerly quoted in quarters of a cent per bushel, is now quoted in sixteenths. This is clearly seen from a glance at the table of average monthly prices given above.

There is one important change in price phenomena which may be traced directly to speculation as such, because no other cause could be equally influential in this direction. This change is not the greater stability of prices, but the greater graduation in price fluctuations. Even if it were to be admitted (for the sake of argument) that prices in the long run show as wide fluctuations as formerly, it is important to notice whether or not these extreme points are registered suddenly or by steady gradations. It needs little more than the mere statement to show the advantage of a speculative system in this matter. There are always some shorts ready to buy in as prices first fall, and some bulls ready to sell out as prices first rise, and these forces are very effective in graduating prices. So perfectly does the system work that a sudden change in price, of any importance, is very rare. The fact is so apparent from a glance at the daily market news as to render statistical illustration unnecessary.[1] This is almost entirely the work of speculation.

The practical benefit of this effect of speculation is great. One of the chief advantages of speculation to the public is the early warning of the change in values. The course of the prices that each day registers is of importance to investors all over the country who have no desire to speculate, and the losses which the great mass of investors are able to avoid by unloading their stock on a gradually falling market are incalculable. Consider the case of a single security, such as Atchison stock. A large amount of that stock found its way into the hands of small investors in New England at comparatively high prices. Without speculation the fall in the value of the securities would have been sudden, coming only with the Atchison bankruptcy. As

[1] No better illustration of this influence on a large scale can be given than the fall of prices on the New York Stock Exchange in 1893. Taking twenty representative securities, the fall in prices averaged forty-five points, more than fifty per cent, between January and July, but the real force of the panic was disguised by the gradual decline through the five months. See *Bradstreet's*, July 29, 1893.

it was, the market opinion of the value of that stock was registered from day to day, and a chance given the holder to unload at each new quotation.

There is a similar practical value to merchants, planters, manufacturers, and others, in the graduated price movements of speculative commodities.

Another question of interest in regard to the effects of speculation on prices is that of the relation between spot prices and prices of futures. In the main, the price of spot goods and the price of future goods are determined by the same factors, viz. the aggregate of the present and anticipated future conditions of the market. It is not true that spot prices are determined by immediate conditions and futures by anticipated conditions. The amount offered and bid for at any particular time, which fixes the spot price, itself depends upon the anticipations of the future. Hence the prices for cash and future goods will generally vary together. When the option runs forward to the time of incoming receipts from the new crops, the price for that delivery tends to stand below the price for deliveries when the supply is small. Except for this influence of the new supply, futures normally stand higher than spot prices by the cost of storage, including interest, insurance, etc., that is, prices for different times are much the same, just as for different places, varying with the cost of storage in the one case and of transportation in the other.[1] But sometimes causes act upon one price alone and make that change independently.[2] This may be the case under

[1] For example, in Chicago the May option normally rules high and stands well above cash wheat early in the year. In July the receipts begin to increase, and that option is often below the price of May wheat. The price of September wheat is relatively low during the summer, but by the time trading in the December option has begun prices of futures again rule high, in some measure according to the distance of the option.

[2] Even the modified statement in the text is only roughly true. It is not uncommonly stated that in the last few years futures in the wheat market have not, in the long run, stood enough above spots to cover all the expenses of carrying. Some suggested reasons for this are : cut charges for storage ; the failure of outside speculation to maintain the market against hedging sales ; the fact that the great elevators will buy wheat and carry it for what they can get, and perform the functions of both carrier and trader for the commission of one. In any case, the tendency is strongly to bring all prices together.

certain speculative conditions. For example, if a large number of shorts have delayed covering until the close of the month for delivery, their efforts to cover will send the spot price well above the prices for later deliveries. Their need is an immediate one. A sharp covering movement before the month of delivery may have a similar effect.

More important than speculative conditions in this regard is the trade situation at certain times of the year. When, for example, mills need the wheat for grinding, and elevators have unused capacity on which they want to earn storage, they will bid up wheat for immediate delivery, because they cannot afford to postpone receiving it. Thus, in Minneapolis, for example, in the early spring the immediate demands of the millers and the elevators, together with the fact that the future needs will be met by the new crops, sometimes put the price of cash wheat above the price of the July or even of the May option. Various other particular causes of this kind may affect either the grain or cotton markets, and cause considerable variation in the relation between spot and future prices.

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Reference has been made thus far only to the effect of time speculation on prices. As already shown, time dealings were preceded by a form of speculative trade which aimed to secure a profit from the differences in price in different places. Such business is to-day known as "arbitrage." To buy where goods were cheap, and to sell where goods were dear, was of course an essential part of the trader's business. This place speculation, however, was not separable from ordinary trade under the earlier conditions of imperfect and uncertain means of communication.

Modern arbitrage business is a far different thing from this earlier form of trade. The great point of difference is that the prices in both the selling and the buying markets are known at the same moment. Consequently prices in different localties can vary but little before being at once equalized by purchases in the lower, and sales in the higher, market. This equalization is more difficult in grain or cotton than in stocks, since to really alter the price may involve all the trouble of making actual shipments.

In the case of securities the cost of transportation is so small that there is to-day but one price for any active stock in all markets.

Arbitrage between international markets, as, for example, between London and New York, is very closely connected with the whole business of foreign exchange. Securities are a familiar means of making international payments, and a foreign exchange house must know at every moment whether the greatest profit comes from the remission of gold, or bills, or securities.[1] The moment a security in London, for example, is higher than in New York by a sufficient amount, an exchange dealer who wishes to remit may sell that security in London, buying at the same time here, and using the debt of the London purchaser to settle the account for which he desires to remit. International arbitrage dealings may be carried on by any one, but in New York the business is chiefly in the hands of a few houses, since the greatest profit in it comes from its use in connection with foreign exchange, a subject beyond the limits of the present discussion. The ordinary speculator does not figure in this field.

The extremely narrow differences in price which prevail between different markets well illustrate the suggestion made above, that perfect speculation destroys itself. Arbitrage business can probably never greatly increase (except as international payments increase), and can never be more than an adjunct to the great mass of time dealings. It has found its limits in its success. Indeed arbitrage, at least in the case of securities, is not speculation at all. If both prices are actually known at the same moment, to buy at one price and sell at another is not to take a risk, and so is not speculation. It is trade. Transatlantic arbitrage has scarcely reached this point as yet, and in any case the nice questions of exchange make the calculation of profits uncertain except to the expert. But the old form of arbitrage dealings between the New York Stock Exchange and the stock exchanges of Boston and Philadelphia was a perfect case of nonspeculative trading of a quick kind. Private wires between

[1] Ehrenberg says such dealings began among the bankers of Genoa and Florence in the fourteenth century. See Handwörterbuch der Staatswissenschaften, article, "Arbitrage."

the cities, telephones in the exchanges, and operators quick to translate and transmit the signals of the brokers on the floor, constituted an effective machinery for operations of a very interesting kind. By means of these devices the same man was practically trading in Boston and in New York at the same time. A change in price in either place was known by the broker on the floor of the other within less than thirty seconds. This was trade reduced to its finest point. It is not necessary to point out how completely such dealings bring about a uniformity of price. The New York Stock Exchange in 1894, however, put an end to such dealings by requiring communications from the floor to the telephone to be sent by a messenger. This made the two markets no longer identical, because of the longer time for communication. This action was taken solely for the practical purpose of bringing the business of other centers to the New York market, and to maintain commission rates more strictly. It was a backward step from the economic point of view, and, on the practical side as well, the opinion is not uncommon that it diminished rather than increased business.

Practices of a very similar kind occur in the case of produce. The simplest transaction is that of buying grain in the market where it is low, selling it at the same time for forward delivery in a high market, and then making a shipment to fulfill the contract.

The theory of uniform prices by means of arbitrage dealings is, however, never completely illustrated in practice. Even in the case of those commodities in which speculation is most common, small divergences are sometimes surprisingly constant. The complaint is heard in New York that the Chicago market is "out of line" for considerable periods of time. The same complaint is made in western markets. In theory we should expect this to be corrected by an increased shipment to Chicago, the higher market, and a consequent fall in price there. But it is said that such results do not follow, that in fact the difference between New York and Chicago may continue for some time to be less than the cost of transportation. At such times to buy grain in Chicago, sell ahead in New York, and make shipment accordingly, is to incur loss. This divergence must

be due to some kind of economic friction which keeps goods from accumulating at that particular center in sufficient quantity to reduce the price. Furthermore the conditions may not always be as they seem. When it is said that Chicago is "out of line with the seaboard," it may be that the statement is true as based on nominal freight rates, but that cut rates to some particular ports make shipment profitable. In any case, the amount of comment and complaint which is brought out by a market's being slightly out of line, and the fact that the condition is so widely recognized are striking evidence of the tendency shown by speculative markets to come to uniform prices. If the rule were not very general in its application, the occasional exception would not cause so much comment. Goods follow prices, says Kohn, by a kind of economic gravitation. But the economic gravitation does not mean that goods always go to the highest market, any more than physical gravitation means that bodies always fall to the ground. In both cases there may be resisting forces. In both cases the law states only a tendency.

The failure of arbitrage transactions to control extreme prices at critical times is due to the fact that transportation is still far from instantaneous. Sales can be made by telegraph, but the contract can be met only by shipment. In consequence the price of some article occasionally reaches an abnormal point in a single market without much effect being felt in other markets. If, for example, there is a short interest in May wheat still out at the very end of the month, the contracts must be covered before the last day, and a squeeze may put the price up to a point limited only by speculative conditions. In this case arbitrage transactions between exchanges are impossible, because no one dares to sell short, and because shipment cannot be made from other points in time to meet the May delivery. The high price is entirely abnormal, and has no relation to the supply of the wheat outside of the single market and the immediate movement. The morning of the 1st of June the price drops back, and after the usual convulsion of reaction the normal course is resumed. In the famous Chicago corner at the end of September, 1888, while the price in Chicago rose more than a dollar in a few days, in New York the rise was only a few cents.

CHAPTER XIV

THE NATURAL HISTORY OF MONEY

1. The Inconvenience of Barter

I[1]

To obtain boats to proceed on my Tanganyika cruise was my first consideration; but the owners of two promised me by Said ibn Salim at Unyanyembe were away, and therefore I could not procure them. I discovered a good one, however, belonging to Syde ibn Habib — who had met Livingstone both in Sékélétu's country and in Manyuéma — and managed to hire it from his agent, though at an extortionate rate.

The arrangement at the hiring was rather amusing. Syde's agent wished to be paid in ivory, of which I had none; but I found that Mohammed ibn Salib had ivory, and wanted cloth. Still, as I had no cloth, this did not assist me greatly until I heard that Mohammed ibn Gharib had cloth, and wanted wire. This I fortunately possessed. So I gave Mohammed ibn Gharib the requisite amount in wire, upon which he handed over cloth to Mohammed ibn Salib, who, in his turn, gave Syde ibn Habib's agent the wished-for ivory. Then he allowed me to have the boat.

II[2]

A Dyak has no conception of the use of a circulating medium. He may be seen wandering in the bazaar with a ball of beeswax in his hand for days together, because he can't find anybody willing to take it for the exact article he requires. This article may not be more than a tenth the value of the beeswax, but he

[1] V. L. Cameron, Across Africa, pp. 176–177.
[2] Brooke, Ten Years in Sarawak, I, 156.

would not sell it for money, and then buy what he wants. From the first he had the particular article in his mind's eye, and worked for the identical ball of beeswax with which, and nothing else, to purchase it.

2. Furs as Money[1]

According to Russian annals the most highly prized furs were those of the squirrel, ermine, marten, beaver, and sable. These were the most important articles of export; all nations were eager to get them; the Khosars, Varaigues, and later the Mongols levied in furs the tribute they imposed on the Slavs and Russians when the latter were obliged to purchase peace; a part of the ordinary taxes must be paid in furs; fines were fixed in this sort of currency; and finally the prices of other commodities were often quoted in furs.

3. Cattle as Money[2]

In the Homeric poems, which cannot be dated later than the eighth century B.C., there is as yet no trace of coined money. We find nevertheless in those poems two units of value; the one is the cow (or ox), or the value of a cow, the other is the talent (*τάλαντον*). The former is the one which has prevailed, and does still prevail, in barbaric communities, such as the Zulus of South Africa, where the sole or principal wealth consists in herds and flocks. For several reasons we may assign to it priority in age as compared with the talent. In the first place it represents the most primitive form of exchange, the barter of one article of value for another, before the employment of the precious metals as a medium of currency: consequently the estimation of values by the cow is older than that by means of a talent or "weight" of gold, or silver, or copper. Again, in Homer, all values are expressed in so many oxen, as

[1] Storch, Cours d'économie politique, IV, 39.

[2] William Ridgeway, The Origin of Metallic Currency and Weight Standards, pp. 2–4.

"golden arms for brazen, those worth one hundred beeves for those worth nine beeves" (Il. VI, 236).

The talent, on the other hand, is only mentioned in Homer in relation to *gold* (for we never find any mention of a talent of *silver*) and we never find the value of any other article expressed in talents. But the names of monetary units hold their ground long after they themselves have ceased to be in actual use, as we observe in such common expressions as "bet a guinea," or worth a "groat," although these coins themselves are no longer in circulation, and so the French *sou* has survived for a century in popular parlance, and the *thaler* has lived into the new German monetary system. Accordingly we may infer that the method of expressing the value of commodities in kine, which we find side by side with the talent, is the elder of the twain.

Was there any immediate connection between the two systems, or were they, as Hultsch ("Metrologie," p. 165) maintains, entirely independent? It is difficult to conceive any people, however primitive, employing two standards at the same time, which are completely independent of each other. For instance, when we find in the Iliad that in a list of three prizes appointed for the foot race, the second is a cow, the third is a half-talent of gold, it is impossible to believe that Achilles, or rather the poet, had not some clear idea concerning the relative value of an ox and a talent. Now it is noteworthy that, as already remarked, nowhere in the poems is the value of any commodity expressed in talents; yet who can doubt that talents of gold passed freely as media of exchange? A simple solution of this difficulty would be that the talent of gold represented the older ox unit. This would account for the fact that all values are expressed in oxen, and not in talents, the older name prevailing in a fashion resembling the usage of *pecunia* in Latin.

A complete parallel for such a practice can be still found at the present moment among some of the Samoyede tribes of Siberia. Thus we read in the account of a recent traveler: "He finally came to the conclusion that for the consideration of five hundred reindeer he would undertake the contract. This I regarded as a very facetious sally on his part. The reindeer,

however, I found was the recognized unit of value, as amongst some tribes of the Ostiaks the Siberian squirrel. For this purpose the reindeer is generally considered to be worth five roubles."[1] Again, forty years ago, Haxthausen[2] tells us that the Ossetes, a Caucasian tribe dwelling not very far from Tiflis, although long accustomed to stamped money, especially on the border of Georgia, kept their accounts in cows, five roubles being reckoned to the cow. Here then in Siberia and in the Caucasus, in spite of a long experience not merely of a metallic unit but of actual coined money, we still find values estimated in reindeer and in cows, the older units, just as in Homer they are stated in oxen.

We shall likewise find that when the ancient Irish borrowed a ready-made silver unit (the *uncia*) from the Romans, they had to equate this unit to their old barter unit, the cow, just as in modern times the wild tribes of Anam, when borrowing the *bar* of silver from their more civilized neighbors, have had to equate it to their native standard, the buffalo; facts in close accord with the well-known derivation of Latin *pecunia*, money, from *pecus*, English *fee* from *feoh*, which still meant cattle, as does the German *Vieh*, and *rupee* (according to some) from Sanskrit *rupa*, also meaning cattle.

4. Shells as Money

I[3]

The *Indians* had nothing which they reckoned Riches, before the *English* went among them, except *Peak*, *Roenoke*, and such like trifles made out of the *Cunk* Shell. These past with them instead of Gold and Silver, and serv'd them both for Money, and Ornament. It was the *English* alone that taught them first to put a value on their Skins and Furs, and to make a Trade of them.

Peak is of two Sorts, or rather of two Colours, for both are made of one Shell, tho' of different Parts; one is a dark Purple

[1] Victor A. L. Morier, *Murray's Magazine*, August, 1889, p. 181.
[2] Trans-Caucasia, p. 410 (English translation, 1854).
[3] From Beverly's History of Virginia (2d edition, 1722).

Cylinder, and the other a white; they are both made in Size, and Figure alike, and commonly much resembling the *English Buglas*, but not so transparent nor so brittle. They are wrought as smooth as Glass, being one third of an Inch long, and about a Quarter Diameter, strung by a hole drill'd thro' the Center. The dark Colour is the dearest, and distinguish'd by the Name of *Wampom Peak*. The *English* Men that are call'd *Indian* Traders, value the *Wampom Peak*, at eighteen Pence *per* Yard, and the white *Peak* at nine Pence. The *Indians* also make Pipes of this, two or three Inches long, and thicker than ordinary, which are much more valuable. They also make *Runtees* of the small Shell, and grind them as smooth as *Peak*. These are either large like an oval Bead, and drill'd the length of the Oval, or else they are circular and flat, almost an Inch over, and one Third of an Inch thick, and drill'd Edgeways. Of this Shell they also make round Tablets of about four Inches Diameter, which they polish as smooth as the other, and sometimes they etch or grave thereon, Circles, Stars, a half Moon, or any other Figure suitable to their Fancy. These they wear instead of Medals before or behind their Neck, and use the *Peak*, *Runtees*, and Pipes for Coronets, Bracelets, Belts, or long Strings hanging down before the Breast, or else they lace their Garments with them, and adorn their *Tomahawks*, and every other thing that they value.

They have also another Sort which is as current among them, but of far less Value; and this is made of the Cockle shell, broken into small bits with rough Edges, drill'd through in the same Manner as Beads, and this they call *Roenoke*, and use it as the *Peak*.

These Sorts of Money have their Rates set upon them as unalterable, and current as the values of our Money are.

The *Indians* have likewise some Pearl amongst them, and formerly had many more, but where they got them is uncertain, except they found them in the Oyster-Banks, which are frequent in this Country.

II[1]

The subject of shell money has hitherto received little more than casual mention. Immense quantities of it were formerly in circulation among the California Indians, and the manufacture of it was large and constant, to replace the continual wastage which was caused by the sacrifice of so much upon the death of wealthy men, and by the propitiatory sacrifices performed by many tribes, especially those of the Coast Range. From my own observations, which have not been limited, and from the statements of pioneers and the Indians themselves, I hesitate little to express the belief that every Indian in the state, in early days, possessed an average of at least one hundred dollars' worth of shell money. This would represent the value of about two women (though the Nishinam never actually bought their wives), or two grizzly-bear skins, or twenty-five cinnamon-bear skins, or about three average ponies. This may be considered a fair statement of the diffusion of wealth among them in their primitive condition.

The manufacture of large quantities of it nowadays by Americans with machinery has diminished its purchasing power by increasing its amount. The younger, English-speaking Indians scarcely use it at all, except in a few dealings with their elders, or for gambling. One sometimes lays away a few strings of it, for he knows he cannot squander it at the stores, and is thus removed from temptation and possible bankruptcy; and when he wishes for a few dollars American money he can raise it by exchanging with some old Indian who happens to have gold. Americans also sometimes keep it for this purpose. For instance, I have known an American who associated a good deal with the Indians to buy a pony for fifteen dollars gold, and sell it to an old Indian for forty dollars shell money. By converting this amount into gold in small sums at a time he cleared twenty-five dollars in the course of a few months. It is singular how the old Indians cling to this currency when they know that it will purchase nothing from the stores; but then their wants

[1] Powers, The Tribes of California, pp. 335–336.

are few and mostly supplied from the sources of nature ; and, besides that, this money has a certain religious value in their minds, as being alone worthy to be offered up on the funeral pyre of departed friends or famous chiefs of their tribe.

III[1]

The native money in New Britain consists of small cowrie shells strung on strips of cane, which in Duke of York is called *dewarra*. It is measured in lengths, the first length being from hand to hand across the chest with the arms extended ; second length from the center of the breast to the hand, one arm extended; and the third from the shoulder to the tip of the fingers along the arm ; fourth, from the elbow to the tip of the fingers ; fifth, from the wrist to the tip of the fingers ; and the sixth, finger lengths. Fish are generally bought by their length in dewarra unless they are too small. A large pig will cost from thirty to forty lengths of the first measure, and a small one, ten.

The dewarra is made up for convenience into coils of one hundred fathoms or first lengths ; sometimes as many as six hundred fathoms are coiled together, but not often, as it would be too bulky to remove quickly in case of an invasion or war, when the women carry it away to hide ; these coils are very neatly covered with wickerwork, like the bottom of our cane chairs. If asked where the shells come from, the natives will tell you that they do not know ; but several of the chiefs do, and it is from a place called Nukani, a considerable distance down the northwest coast.

The shells are buried in the earth to bleach them, after which they are tapped with a stone on the top, which breaks a small hole ; they are then strung on strips of cane ; this last process is, I believe, done by the chiefs alone.

The measurement of the shell money is the same in New Britain as here, though it is called by another name (*taboo*). At Mioko and Utuan they use another kind of money as well as

[1] Powell, Wanderings in a Wild Country, pp. 55–57.

this, the other being made of a little bivalve shell, through which they bore a hole and string it on pieces of native-made twine ; it is also chipped all around until it is about a quarter of an inch in diameter, and then smoothed down into even disks with sand and pumice stone. This is of no use in Duke of York island, but is eagerly asked for in Birara (another connecting link between the south of Duke of York and that district of New Britain).

5. Other Commodities as Money: The Metals

I. The Currency of the Aztecs[1]

Their commerce was not only carried on by way of exchange, as many authors report, but likewise by means of real purchase and sale. They had five kinds of real money, though it was not coined, which served them as a price to purchase whatever they wanted. The first was a certain species of cacao, different from that which they used in their daily drink, which was in constant circulation through the hands of traders, as our money is amongst us. They counted the cacao by *Xiquipilli* (this, as we have before observed, was equal to eight thousand), and to save the trouble of counting them when the merchandize was of great value, they reckoned them by sacks, every sack having been reckoned to contain three *Xiquipilli*, or twenty-four thousand nuts. The second kind of money was certain small cloths of cotton, which they called *patolquachtli*, as being solely destined for the purchase of merchandizes which were immediately necessary. The third species of money was gold in dust, contained in goose-quills, which by being transparent, shewed the precious metal which filled them, and in proportion to their size were of greater or less value. The fourth, which most resembled coined money, was made of pieces of copper in the form of a T, and was employed in purchases of little value. The fifth, of which mention is made by Cortes, in his last letter to the emperor Charles the Vth, consisted of thin pieces of tin.

[1] Clavijero, History of Mexico, Bk. VII.

II. The Currency of the Queen Charlotte Islanders[1]

Among most of the coast tribes the dentalium shell was prized, but not so much as a means of exchange among themselves as for barter with the Indians of the interior. By the Haidas the dentalium is called *kwo-tsing*, but as these people were by their position debarred from the trade with the interior, it was probably never of so great value to them. It is still sometimes worn in ornaments, but has disappeared as a medium of exchange.

Another article of purely conventional value, and serving as money, is the "copper." This is a piece of native metal beaten out into a flat sheet. . . . These are not made by the Haidas, — nor indeed is the native metal known to exist in the islands, — but are imported as articles of great worth from the Chil-kat country north of Sitka. Much attention is paid to the size and make of the copper, which should be of uniform but not too great thickness, and give forth a good sound when struck with the hand. At the present time spurious coppers have come into circulation, and though these are easily detected by an expert, the value of the copper has become somewhat reduced, and is often more nominal than real. Formerly ten slaves were paid for a good copper, as a usual price; now they are valued at from forty to eighty blankets.

The "blanket" is now, however, the recognized currency, not only among the Haidas, but generally along the coast. It takes the place of the beaver-skin currency of the interior of British Columbia and the Northwest Territory. The blankets used in trade are distinguished by points, or marks on the edge, woven into their texture, the best being four point, the smallest and poorest one point. The acknowledged unit of value is a single two-and-a-half-point blanket, now worth a little over a dollar and a half. Everything is referred to this unit; even a large four-point blanket is said to be worth so many blankets. The Hudson Bay Company at their posts, and other traders,

[1] Dawson, "Report on the Queen Charlotte Islands," Geological Survey of Canada, 1878–1879, p. 135 B.

not infrequently buy in blankets, taking them — when in good condition — from the Indians as money, and selling them out again as required.

Blankets are carefully stowed away in large boxes, neatly folded. A man of property may have several hundred. The practice of amassing wealth in blankets no doubt had its origin in an earlier one of accumulating the sea-otter and fur-seal robes, which stood in the place of blankets in former days. This may help to explain the rich harvest of these skins which the first traders to the Queen Charlotte Islands gathered.

III. The Currency of the Abyssinians[1]

The object Walderhoes and I had now in view was to change the dollar, and for this purpose we sought out that portion of the plain where, in several orderly lines, numerous salt brokers sat behind heaps of *ahmulahoitsh*, the remarkable currency of Shoa, in common with all parts of Abyssinia.

These *ahmulahs*, as they may be called, are thin bricks of salt, which have been not inaptly compared in size and shape to a mower's whetstone; they vary some little in size, but few of them are less than eight inches long. Their form is rather interesting, from the fact of their being cut somewhat in the ancient form of money pieces, thinner at the two extremities than in the middle, and if of metal might not have been inaptly termed a spit. The breadth across the center of the ahmulah is a little over two inches, whilst at the extremities it scarcely measures one inch. The height or thickness is uniform, being usually about one inch and a quarter. As may naturally be supposed, this money, consisting of a material so soft and deliquescent as common salt, becomes denuded by use, and a great difference consequently exists between the weight of a new specimen and one that has been in exchange for only a few months. During the rainy season, especially, in Abyssinia the waste of the ahmulahs is very great, although the inhabitants, by burying them in the wood ashes of their large hearths, or suspending them in the

[1] Johnston, Travels in Southern Abyssinia, pp. 232–237.

smoke from the roof, endeavor to preserve them, at that time, from the action of the moisture in the atmosphere.

* * * * * * * *

It not unfrequently happens, either from carelessness or atmospherical causes, that the ahmulahs become very cellular and light. In that case the holes are stopped up with a paste of meal and fine salt dust, but the ahmulah so adulterated is generally rejected at once when offered, or a very considerable reduction is made in its value when any article is purchased.

When by any accident the salt pieces are broken they are receivable only as common salt, although sometimes, if cut into two pieces, these are bound round with a piece of very pliant tough bark called *lit*, and at a diminished value still circulate.

Besides ahmulahs the Shoan markets are supplied with a rough broken salt in thin broad pieces, of no use but for culinary purposes, by the Dankalli, who bring it to Dinnomalee from the Bahr Assal, or salt lake, near Tajourah. This kind of salt is of less value than the ahmulah, and is only employed as barter, and the solid money piece will command weight for weight one half as much more of the Adal salt; so that the Shoans submit to a loss of just fifty per cent of material for the convenience of their clumsy currency.

IV. Currency in Central Africa[1]

A regular system of exchange is carried on in arrows, beads, bead necklaces, teeth necklaces, brass rings for the neck and arm, and bundles of small pieces of iron in flat, round, or oval disks. All these different articles are given in exchange for cattle, corn, salt, arrows, etc.

The nearest approach to money, in our sense, is seen in the flat round pieces of iron, which are of different sizes from one half to two feet in diameter, and two thirds of an inch thick. They are much employed in exchange.

[1] Felkin, "Notes on the Madi or Moru Tribe of Central Africa," in *Proceedings of the Royal Society of Edinburgh*, XII, 350.

This is the form in which they are kept and used as money, but they are intended to be divided into two, heated, and made into hoes. They are also fashioned into other implements, such as knives, arrowheads, etc., and into little bells to hang round the waist for ornament, or round wandering cows' necks.

Ready-made hoes are not often used in barter ; iron as above mentioned is preferred, and is taken to a blacksmith to finish according to the owner's requirements.

Any tools may be obtained ready-made from a smith, and may be used in barter when new.

6. Barter Currency in North Carolina: Gresham's Law[1]

The Province of North Carolina was first settled by People from Virginia in low circumstances who moved hither for the benefit of a larger and better range for their Stocks, from such a small Beginning it was a great many years before it appeared there was any Increase of Inhabitants sufficient to form a Government the whole number of Taxables in Thirty years time not amounting to one thousand, and those generally dwelt on the North side of Albemarle sound, and composed the four Precincts of Chowan, Perquimons, Pasquotank & Currituck, which Precincts, now called Counties sent each of them five Members to the Assembly, the whole number at that time amounting to those Twenty Members.

The poverty of the first Inhabitants made (for want of a better currency) to Enact in their Assemblies that all Payments whatsoever, might be made in sundry Commodities or Products of the Province a List whereof here follows, agreable to the Law as it past upon the Revise, Anno : 1715.

	£.	s.	d.
Indian Corn per bushel	—	1	8
Tallow per Pound	—	—	5
Beaver & Otter Skins per Pound	—	2	6
Butter per Pound	—	—	6
Raw buck and Doe Skins per Pound	—	—	9
Feathers per Pound	—	1	4

[1] From letter of Governor Johnston to the Board of Trade (1749), *Colonial Records of North Carolina*, IV, 920–921.

	£.	s.	d.
Pitch per Barrel full guaged	1	—	—
Pork per Barrel	2	5	—
Tobacco per 100 cwt.	—	10	—
Wheat per Bushel	—	3	6
Leather tann'd uncurried per pound	—	—	8
Wild Cat Skins per piece	—	1	—
Cheese per Pound	—	—	4
Drest Buck & Doe Skins per Pound	—	2	6
Tarr per Barrel full guaged	—	10	—
Whale Oil per Barrel	1	10	—
Beef per Barrel	1	10	—

This method has been continued down to this time with very little Alteration to the great Damage of the Revenue it being a stated rule, that of so many Commodities the worst sort only were paid. Altho' many attempts have been made to remedy the Inconvenience attending such a currency it has always proved fruitless (the People being generally fond of a Law which gave them such Advantages).

7. Why Coinage is Necessary [1]

A coinage system does not exist in Burma. The former king coined some rupees stamped with the peacock, but this money has wholly disappeared. The bullion which passes in trade consists of silver alloyed with copper in three or four different proportions. The best, which is almost pure, is called *bau;* the next *dain* or *youetni;* and the least valuable, but most commonly employed in small dealings, is called *azekiay.* When a person goes to market he carries a piece of this silver, a hammer, a chisel, a pair of scales, and a set of weights. "What is the price of these kitchen pots?" "Show me your money," replies the merchant, who fixes his price at a larger or smaller figure according to the appearance of the silver. The buyer then calls for a small anvil, and hammers at the piece of silver until he thinks he has chipped off the right amount. Then he weighs the silver in his own scales, since the merchant's are not to be trusted, and adds or subtracts enough to make the weight precisely right.

[1] Bastian, Die Völker des östlichen Asiens, II, ii.

Of course considerable metal is lost by the process of chipping; and it is always best to buy, not the exact amount of the commodity one desires, but the amount equivalent to the piece of silver one has broken off. In large purchases, which are made only with the finest silver, the process is still more troublesome, since an assayer must be called to determine the precise fineness of the silver, and he must be paid for his services. . . . In Upper Burma for the smallest transactions they use lumps of lead as well as the poorest grade of silver (*azekiay*). A dealer must have at hand a large box of this lead, which has to be weighed on larger scales than are used for weighing the silver.

8. Representative Money

I. Leather Money in Russia[1]

The annals of Russia afford us a fact even more curious than those I have just cited, — the existence of a credit money representing not gold and silver, but skins and furs. At the period when skins were used in Russia, the inconvenience of handling such a bulky and perishable medium of exchange gave rise to the idea of replacing them by little pieces of stamped leather which thus became tokens redeemable in skins and furs. Afterward, when a coinage system was established, these leather tokens represented the fractional parts of the silver kopeck. They continued to be thus used until the year 1700, at least in the town of Kalouga and its vicinity, as we learn from an edict of Peter I, by which this prince ordered that the tokens should be exchanged for the small copper pieces which he had just had coined for this purpose.

II. Token Money in West Africa[2]

Among the Fan tribes of the West African coast there is "a very peculiar and interesting form of currency, — *bikĕi*, little iron imitation ax heads which are tied in bundles called *utet*,

[1] Storch, Cours d'économie politique, IV, 79.

[2] Mary Kingsley, Travels in West Africa, pp. 320–321 [London, 1897].

ten going to one bundle; with bikĕi the price of a wife must be paid. You cannot do so with rubber or ivory or goods. These bikĕi pass, however, as common currency among the Fans, for other articles of trade as well. . . . I thought I saw in bikĕi a certain resemblance in underlying idea with the early Greek coins I had seen at Cambridge, made like the fore parts of cattle: and I have little doubt that the articles of barter among the Fans, before the introduction of the rubber, ebony, and ivory trades, which in this district are comparatively recent, were iron implements. The Fans are good workers in iron; and it would be in consonance with well-known instances among other savage races in the matter of stone implements, that these things, important of old, should survive, and should be employed in the matter of such an old and important affair as marriage."

III. Chinese Paper Money in the Thirteenth Century [1]

Now that I have told you in detail of the splendour of this City of the Emperor's, I shall proceed to tell you of the Mint which he hath in the same city, in the which he hath his money coined and struck, as I shall relate to you. And in doing so I shall make manifest to you how it is that the Great Lord may well be able to accomplish even much more than I have told you, or am going to tell you, in this Book. For, tell it how I might, you never would be satisfied that I was keeping within truth and reason!

The Emperor's Mint then is in this same City of Cambaluc, and the way it is wrought is such that you might say he hath the Secret of Alchemy in perfection, and you would be right! For he makes his money after this fashion.

He makes them take of the bark of a certain tree, in fact of the Mulberry Tree, the leaves of which are the food of the silk-worms, — these trees being so numerous that whole districts are full of them. What they take is a certain fine white bast or skin which lies between the wood of the tree and the thick outer

[1] Travels of Marco Polo, edited by Henry Yule, I, pp. 423–426 [London, 1903].

bark, and this they make into something resembling sheets of paper, but black. When these sheets have been prepared they are cut up into pieces of different sizes. The smallest of these sizes is worth a half tornesel; the next, a little larger, one tornesel; one, a little larger still, is worth half a silver groat of Venice; another a whole groat; others yet two groats, five groats, and ten groats. There is also a kind worth one Bezant of gold, and others of three Bezants, and so up to ten. All these pieces of paper are issued with as much solemnity and authority as if they were of pure gold or silver; and on every piece a variety of officials, whose duty it is, have to write their names, and to put their seals. And when all is prepared duly, the chief officer deputed by the Kaan smears the Seal entrusted to him with vermilion, and impresses it on the paper, so that the form of the Seal remains printed upon it in red; the Money is then authentic. Any one forging it would be punished with death. And the Kaan causes every year to be made such a vast quantity of this money, which costs him nothing, that it must equal in amount all the treasure in the world.

With these pieces of paper, made as I have described, he causes all payments on his own account to be made; and he makes them to pass current universally over all his kingdoms and provinces and territories, and whithersoever his power and sovereignty extend. And nobody, however important he may think himself, dares to refuse them on pain of death. And indeed everybody takes them readily, for wheresoever a person may go throughout the Great Kaan's dominions he shall find these pieces of paper current, and shall be able to transact all sales and purchases of goods by means of them just as well as if they were coins of pure gold. And all the while they are so light that ten Bezants' worth does not weigh one golden Bezant.

Furthermore all merchants arriving from India or other countries, and bringing with them gold or silver or gems and pearls, are prohibited from selling to anyone but the Emperor. He has twelve experts chosen for this business, men of shrewdness and experience in such affairs; these appraise the articles, and the Emperor then pays a liberal price for them in those pieces of

paper. The merchants accept his price readily, for in the first place they would not get so good an one from anybody else, and secondly they are paid without any delay. And with this paper-money they can buy what they like anywhere over the Empire, whilst it is also vastly lighter to carry about on their journeys. And it is a truth that the merchants will several times in the year bring wares to the amount of 400,000 Bezants, and the Grand Sire pays for all in that paper. So he buys such a quantity of those precious things every year that his treasure is endless, whilst all the time the money he pays away costs him nothing at all. Moreover, several times in the year proclamation is made through the city that any one who may have gold or silver or gems or pearls, by taking them to the Mint shall get a handsome price for them. And the owners are glad to do this, because they would find no other purchaser give so large a price. Thus the quantity they bring in is marvellous, though those who may not choose to do so may let it alone. Still, in this way, nearly all the valuables in the country come into the Kaan's possession.

When any of those pieces of paper are spoilt — not that they are so very flimsy either — the owner carries them to the Mint, and by paying three per cent on the value he gets new pieces in exchange. And if any Baron, or any one else soever, hath need of gold or silver or gems or pearls, in order to make plate, or girdles, or the like, he goes to the Mint and buys as much as he list, paying in this paper-money.

Now you have heard the ways and means whereby the Great Kaan may have, and in fact *has*, more treasure than all the Kings in the World; and you know all about it and the reason why. And now I will tell you of the Great Dignitaries which act in this City on behalf of the Emperor.

IV. Tobacco Notes in the Colony of Virginia[1]

No further attempt was made to reintroduce this note system until 1730, when it was established in a slightly different form which gave less offense to the planters. This act "For

[1] Ripley, Financial History of Virginia, pp. 148–151.

Amending the Staple of Tobacco; and preventing Frauds in His Majesty's Customs," was passed by the Assembly with two distinct objects in view. The first of these was to provide for such inspection of the staple export of the colony as should prevent it from being brought into discredit abroad, to the damage of the general interests of the colony. The second and minor object was to provide a convenient medium of circulation for local or domestic exchanges, and especially for the payment of taxes, quitrents, fees, and other public dues. In this latter sense it may be regarded as a mint regulation to prevent fraud in the payment of debts through debasement of the medium of exchange. Since our purpose is to show its fiscal importance merely, this latter object alone will be held in view. The first consideration belongs rather to a history of commerce. The act of 1730 provided that no tobacco should be exported from the colony, or used in the payment of any public or private debts, until it had been inspected by two public officials appointed by the governor on the nomination of the county courts. This tobacco was then to be deposited in casks in public warehouses conveniently located in each county for that purpose, there to remain until it was exported. If it were to be used for the payment of any domestic debts, "promissory notes" were issued to the full amount of the tobacco on deposit. These "transfer notes" were to state the amount, the particular brand, the date of deposit, and the warehouse wherein the tobacco lay. They were to be a legal tender for all tobacco debts in that particular county where the warehouse was located, or in any adjacent ones not separated from it by one of the great rivers. They were to be convertible into tobacco on demand at the warehouse where the tobacco was deposited, but they were not to constitute a lien upon any particular casks; they were merely representative of a given amount of tobacco of a certain grade. In order to prevent discrimination or inequality in the payment of public debts, due to the difficulty and cost of transportation to the warehouses from different places more or less distant, certain drawbacks were permitted. These varied from thirty per cent in the inland counties to ten per cent on the shores of the Chesapeake

and on the great rivers. For private exchanges, however, such drawbacks were neutralized by reimbursing the creditor from tobacco levied by the county courts for that purpose. In case of destruction of the warehouses by fire or flood, the Assembly held itself liable for the loss incurred.

A substantial addition to this system was made in 1734, when a second variety of circulating notes was authorized. This was to provide for the case of the "private crops of gentlemen," which gave so much offense in the first law. This law applied to all tobacco which was merely stored awaiting export, and not intended for the payment of public dues. For such tobacco, so-called "crop notes" were issued against specified hogsheads, which were distinctly branded and specially reserved until the notes representing them should be presented. The inspection for this tobacco was less rigorous, and the fees were only about one half as great as those allowed for the inspection of transfer tobacco. Provision was made for an exchange of crop for transfer notes by the payment of an additional fee.

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This system underwent but few modifications in the colonial period, except so far as changes in administration were made necessary by the increase of population and the determined attempts to evade the law. The transfer tobacco which was received in the payment of public debts was sold annually, and the proceeds were devoted to the proper uses. They were not to pass current after that year, but others were substituted for them. Gradually the crop notes seem to have become used for the payment of debts, which apparently was not the original intention of the legislators. This led to considerable frauds, and in 1748 a more stringent law was enacted, strictly and effectively limiting the legal tender quality to the transfer and crop notes. The system was suspended for a time during the war of 1755, but in 1761 was revived in the old form. The only change previous to the Revolution was a reduction of the time of deposit for crop tobacco notes from eighteen to twelve months. This was found necessary to prevent the great waste from shrinkage.

CHAPTER XV

PAPER MONEY IN FRANCE[1]

Near the end of the year 1789 the French nation found itself in deep financial embarrassment: there was a heavy debt and a serious deficit.

The vast reforms of that year, though a lasting blessing politically, were a temporary evil financially. There was a general want of confidence in business circles; capital had shown its proverbial timidity by retiring out of sight as far as possible; but little money was in circulation; throughout the land was temporary stagnation.

Statesmanlike measures, careful watching, and wise management, would doubtless have led, ere long, to a return of confidence, a reappearance of money, and resumption of business; but this involved waiting, self-denial, and self-sacrifice; and thus far in human history those are the rarest products of an improved political condition. Few nations, up to this time, have been able to exercise these virtues; and France was not then one of those few.

There was a general looking about for some short road to prosperity; ere long, the idea was set afloat that the great want of the country was more of the circulating medium; and this was speedily followed by calls for an issue of paper money. The Minister of Finance at this period was Necker. In financial ability he was acknowledged among the great bankers of Europe; but he had something more than financial ability: he had a deep feeling of patriotism and a high sense of personal honor. The difficulties in his way were great, but he steadily endeavored to keep France faithful to those financial principles which the

[1] By Honorable Andrew D. White. Reprinted, by consent of the author and publisher, from Fiat Money Inflation in France. Copyright, 1877, by D. Appleton & Company, New York.

general experience of modern times had established as the only path to national safety. As difficulties arose, the National Assembly drew away from him, and soon came among the members muttered praises of paper money; members like Allarde and Gouy held it up as a panacea, — as a way of "securing resources without paying interest." This was echoed outside; the journalist Loustalot caught it up and proclaimed its beauties; Marat, in his newspaper, also joined the cries against Necker, picturing him — a man who gave up health and fortune for the sake of France — as a wretch seeking only to enrich himself from the public purse.

Against the tendency to the issue of irredeemable paper Necker contended as best he might. . . . But the current was too strong; on the 19th of April, 1790, the Finance Committee of the Assembly reported that "the people demand a new circulating medium"; that "the circulation of paper money is the best of operations"; that "it is the most free because it reposes upon the will of the people"; that "it will bind the interests of the citizens to the public good."

The report appealed to the patriotism of the French people with the following exhortation: "Let us show to Europe that we understand our own resources; let us immediately take the broad road to our liberation, instead of dragging ourselves along the tortuous and obscure paths of fragmentary loans"; it concluded by recommending an issue of paper money, carefully guarded, to the amount of four hundred million francs.

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But mingled with the financial argument was a very strong political argument. The nation had just taken as its own the vast real property of the French Church, the pious accumulations of thirteen hundred years. There were princely estates in the country, sumptuous palaces and conventual buildings in the towns; these formed about one third of the entire real property of France, and amounted in value to about four thousand million francs, yielding a yearly income of about two hundred millions. By one sweeping stroke all this had become the property of the nation; never, apparently, did a nation secure a more solid basis for a great financial future.

There were two great reasons why French statesmen desired speedily to sell these lands. First, a financial reason, — to obtain money to relieve the government. Secondly, a political reason, — to get this land distributed among the thrifty middle classes, and so to commit them to the Revolution and to the government which gave their title.

It was urged, then, that the issue of four hundred millions of paper would give the treasury something to pay out immediately, and relieve the national necessities; that, having been put into circulation, this paper money would stimulate business; that it would give to all capitalists, large or small, the means for buying of the nation the ecclesiastical real estate, and that from the proceeds of this real estate the nation would again obtain new funds for new necessities: never was theory more seductive both to financiers and statesmen.

But it would be a great mistake to suppose that the statesmen of France, or the French people, were ignorant of the dangers of issuing irredeemable paper money. No matter how skillfully the bright side of such a currency was exhibited, all thoughtful men in France knew something of its dark side. They knew too well, from that fearful experience in John Law's time, the difficulties and dangers of a currency not based upon specie. They had then learned how easy it is to issue it; how difficult it is to check an overissue; how seductively it leads to the absorption of the means of the workingmen and men of small fortunes; how surely it impoverishes all men living on fixed incomes, salaries, or wages; how it creates on the ruins of the prosperity of all workingmen a small class of debauched speculators, the most injurious class that a nation can harbor, more injurious, indeed, than professional criminals whom the law recognizes and can throttle; how it stimulates overproduction at first, and leaves every industry flaccid afterward; how it breaks down thrift, and develops political and social immorality. All this France had been thoroughly taught by experience.

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Oratory prevailed over science and experience. In December, 1789, came the first decree. After much discussion it was

decided to issue four hundred million francs in paper money, based upon the landed property of the nation as its security. The deliberations on this first decree, and on the bill carrying it into effect, were most interesting ; prominent in the debate were Necker, Dupont, Maury, Cazalès, Bailly, and many others hardly inferior. . . .

At last, in April, 1790, the four hundred million francs were issued in assignats — paper money secured by a pledge of productive real estate, and bearing interest to the holder at three per cent. No irredeemable currency has ever claimed a more scientific and practical guarantee for its goodness and for its proper action on public finances. On one side it had what the world universally recognized as the most practical security, — a mortgage on productive real estate of vastly greater value than the issue. On the other hand, as the notes bore interest, there was every reason for their being withdrawn from circulation whenever they became redundant.

As speedily as possible the notes were put into circulation. Unlike those issued in John Law's time, they were engraved in the best style of the art. To stimulate loyalty, the portrait of the king was placed in the center; to stimulate patriotism, patriotic legends and emblems surrounded him; to stimulate public cupidity, the amount of interest which the note would yield each day to its holder was printed on the margin; and the whole was duly garnished with stamps and signatures, showing that it was under careful registration and control.

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The first result of this issue was apparently all that the most sanguine could desire ; the treasury was at once greatly relieved ; a portion of the public debt was paid ; creditors were encouraged ; credit revived ; ordinary expenses were met, and the paper money having thus been passed from the government into the midst of the people, trade was revived, and all difficulties seemed past. The anxieties of Necker, the prophecies of Bergasse, Maury, and Cazalès, seemed proven utterly futile. And, indeed, it is quite possible that, if the national authorities had stopped with this issue, few of the evils which afterward arose would

have been severely felt; the four hundred millions of paper money then issued had simply taken the place of a similar amount of specie. But soon there came another result: times grew less easy; by the end of August, within four months after the issue of the four hundred million assignats, the government had spent them, and was again in distress. The old remedy immediately and naturally occurred to the minds of men. Thoughtless persons throughout the country began to cry out for another issue of paper; thoughtful men then began to recall what their fathers had told them about the seductive path of paper-money issues in John Law's time, and to remember the prophecies that they themselves had heard in the debate on the first issue of assignats less than six months before.

In that debate, as we have seen, Maury and Cazalès foretold trouble. Necker, who was less suspected of reactionary tendencies, had certainly feared danger. The strong opponents of paper had prophesied, at that time, that, once on the downward path of inflation, the nation could not be restrained, and that more issues would follow. The supporters of the first issue had asserted that this was a calumny; that France could and would check these issues whenever she desired.

The condition of opinion in the Assembly was, therefore, chaotic; a few schemers and dreamers were loud and outspoken for paper money; many of the more shallow and easy-going were inclined to yield; the more thoughtful endeavored manfully to breast the current.

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Into the midst of this debate is brought a report by Necker. Most earnestly he endeavors to dissuade the Assembly from the proposed issue; suggests that other means can be found for accomplishing the result, and predicts terrible evils. But the current is again running too fast. The only result is that Necker is spurned as a man of the past. He at last sends in his resignation, and leaves France forever. The paper-money demagogues shout for joy at his departure; their chorus rings through the journalism of the time. No words can express their contempt for a man who cannot see the advantages of

filling the treasury with the issues of a printing press. Marat, Hébert, and Camille Desmoulins are especially jubilant.

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The nation at large now began to take part in the debate; thoughtful men saw that here was the turning point between good and evil; that the nation stood at the parting of the ways. Most of the great commercial cities bestirred themselves and sent up remonstrances against the new emission, twenty-five being opposed and seven being in favor of it. But on September 27, 1790, came Mirabeau's great final speech. In this he dwelt first on the political necessity involved, declaring that the most pressing need was to get the government lands into the hands of the people, and so to commit the class of land-holders thus created to the nation, and against the old privileged classes.

Through the rest of the speech there is one leading point enforced with all his eloquence and ingenuity, — the thorough excellence of the proposed currency and the stability of its security. He declares that, being based on the pledge of public lands, and convertible into them, the notes are better secured than if redeemable in specie; that the precious metals are only employed in the secondary arts, while the French paper money represents the first and most real of all property, the source of all production, the *land itself;* that, while other nations have been obliged to emit paper money, none has ever been so fortunate as the French nation, for none has ever before been able to give landed security for its paper; that whoever takes French paper money has practically a mortgage to secure it on landed property which can be easily sold to satisfy his claims, while other nations have only been able to give a vague claim on the entire nation. "And," he cries, "I would rather have a mortgage on a garden than on a kingdom!"

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In vain did Maury show that, while the first issues of John Law's paper had brought apparent prosperity, those that followed brought certain misery; in vain did he quote from a book published in John Law's time, showing that Law was at first

considered a patriot and friend of humanity; in vain did he hold up to the Assembly one of Law's bills, and appeal to their memories of the wretchedness brought on France by them; nothing could resist the eloquence of Mirabeau. Barnave follows; says that "Law's paper was based upon the phantoms of the Mississippi; ours upon the solid basis of ecclesiastical lands," and proves that the assignats cannot depreciate further. Prudhomme's newspaper pours contempt over gold as security for the currency, extols real estate as the only true basis, and is fervent in praise of the convertibility and self-adjusting features of the proposed scheme. In spite of all this plausibility and eloquence, a large minority stood firm to their earlier principles; but on the 29th of September, by a vote of 508 to 423, the deed was done; a bill was passed authorizing the issue of eight hundred millions of new assignats, but solemnly declaring that in no case should the entire amount put in circulation exceed twelve hundred millions. To make assurance doubly sure, it is also provided that, as fast as the assignats were paid into the treasury for land, they should be burned; and thus a healthful contraction be constantly maintained.

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France was now fully committed to a policy of inflation; and, if there had been any doubt of this before, it was soon proved by an act of the government, very plausible, but none the less significant as showing the exceeding difficulty of stopping a nation once in the full tide of a depreciated currency. The old cry of the "lack of a circulating medium" broke forth again; and especially loud were the clamors for more small bills. This resulted in an evasion of the solemn pledge that the circulation should not go above twelve hundred millions, and that all assignats returned to the treasury for land should immediately be burned. Within a short time there had been received into the treasury for lands one hundred and sixty million francs in paper. By the terms of the previous acts this amount ought to have been retired. Instead of this, under the plea of necessity, one hundred millions were reissued in the form of small notes.

Yet this was but as a drop of cold water to a parched throat. Although there was already a rise in prices which showed that the amount needed for circulation had been exceeded, the cry for "more circulating medium" was continued. The pressure for new issues became stronger and stronger. The Parisian populace and the Jacobin Club were especially loud in their demands for them; and a few months later, on June 19, 1791, with few speeches, in a silence very ominous, a new issue was made of six hundred millions more; less than nine months after the former great issue, with its solemn pledges as to keeping down the amount in circulation. With the exception of a few thoughtful men, the whole nation again sang pæans.

In this comparative ease of a new issue is seen the action of a law in finance as certain as the action of a similar law in natural philosophy. If a material body fall from a height, its velocity is accelerated, by a well-known law in physics, in a constantly increasing ratio: so in issues of irredeemable currency, in obedience to the theories of a legislative body, or of the people at large, there is a natural law of rapidly increasing issue and depreciation. The first inflation bill was passed with great difficulty, after a very sturdy resistance, and by a majority of a few score out of nearly a thousand votes: but you observe now that new inflation measures are passed more and more easily, and you will have occasion to see the working of this same law in a more striking degree as this history develops itself.

Nearly all Frenchmen now became desperate optimists, declaring that inflation is prosperity. Throughout France there became temporary good feeling. The nation was becoming fairly inebriated with paper money. The good feeling was that of a drunkard after his draught: and it is to be noted, as a simple historical fact, corresponding to a physiological fact, that, as the draughts of paper money came faster, the periods of succeeding good feeling grew shorter.

Various bad signs had begun to appear. Immediately after this last issue came a depreciation of from eight to ten per cent: but it is very curious to note the general reluctance to assign the right reason. The decline in the purchasing power of paper

money was in obedience to one of the simplest laws in social physics; but France had now gone beyond her thoughtful statesmen, and took refuge in unwavering optimism, giving any explanation of the new difficulties rather than the right one. A leading member of the Assembly insisted, in an elaborate speech, that the cause of depreciation was simply want of knowledge and of confidence among the rural population, and proposed means of enlightening them. La Rochefoucauld proposed to issue an address to the people, showing the goodness of the currency and the absurdity of preferring coin. The address was unanimously voted. . . .

Attention was next aroused by another menacing fact, — specie was fast disappearing. The explanations for this fact also displayed wonderful ingenuity in finding false reasons and evading the true one. A very common explanation may be found in Prudhomme's newspaper, *Les Révolutions de Paris*, of January 17, 1791, which declared that "coin will keep rising until the people have hung a broker." Another popular theory was that the Bourbon family were in some miraculous way drawing off all solid money to the chief centers of their intrigues in Germany.

Still another favorite idea was that English emissaries were in the midst of the people, instilling notions hostile to paper. Great efforts were made to find these emissaries, and more than one innocent person experienced the popular wrath, under the supposition that he was engaged in raising gold and depressing paper. Even Talleyrand, shrewd as he was, insisted that the cause was simply that the imports were too great and the exports too little. As well might he explain the fact that, when oil is mingled with water, water sinks to the bottom, by saying that it is because the oil rises to the top. This disappearance of specie was the result of a natural law as simple and sure in its action as gravitation : the superior currency had been withdrawn because an inferior could be used. . . .

Still another troublesome fact began now to appear. Though paper money had increased in amount, prosperity had steadily diminished. In spite of all the paper issues business activity

grew more and more spasmodic. Enterprise was chilled, and stagnation had set in. Mirabeau, in his speech which decided the second great issue of paper, had insisted that, though bankers might suffer, this issue would be of great service to manufacturers and restore their prosperity. The manufacturers were for a time deluded, but were at last rudely awakened from their delusions. The plenty of currency had at first stimulated production and created a great activity in manufactures, but soon the markets were glutted, and the demand was vastly diminished. . . . One manufactory after another stopped. At one town, Lodève, five thousand workmen were discharged from the cloth manufactories. Every cause except the right one was assigned for this. Heavy duties were put upon foreign goods. Everything that tariffs and customhouses could do was done. Still the great manufactories of Normandy were closed, those of the rest of the kingdom speedily followed, and vast numbers of workmen in all parts of the country were thrown out of employment. Nor was this the case alone in regard to home demand. The foreign demand, which had been at first stimulated, soon fell off. In no way can this be better stated than by one of the most thoughtful historians of modern times: "It is true that at first the assignats gave the same impulse to business in the city as in the country, but the apparent improvement had no firm foundation even in the towns. Whenever a great quantity of paper money is suddenly issued we invariably see a rapid increase of trade. The great quantity of the circulating medium sets in motion all the energies of commerce and manufactures; capital for investment is more easily found than usual, and trade receives fresh nutriment. If this paper represents real credit, founded upon order and legal security, from which it can derive a firm and lasting value, such a movement may be the starting point of a great and widely extended prosperity, as, for instance, the most splendid improvements in English agriculture were undoubtedly owing to the emancipation of the country bankers. If, on the contrary, the new paper is of precarious value, as was clearly seen to be the case with the French assignats as early as February, 1791, it can have no

lasting, beneficial fruits. For the moment, perhaps, business receives an impulse, all the more violent because every one endeavors to invest his doubtful paper in buildings, machines, and goods, which under all circumstances retain some intrinsic value. Such a movement was witnessed in France in 1791, and from every quarter there came satisfactory reports of the activity of manufactures.

"But, for the moment, the French manufacturers derived great advantage from this state of things. As their products could be so cheaply paid for, orders poured in from foreign countries to such a degree that it was often difficult for the manufacturers to satisfy their customers. It is easy to see that prosperity of this kind must very soon find its limit. . . . When a further fall in the assignats took place it would necessarily collapse at once, and be succeeded by a crisis all the more destructive the more deeply men had engaged in speculation under the influence of the first favorable prospects." [1]

Thus came a collapse in manufacturing and commerce, just as it had come before in France; just as it came afterward in Austria, Russia, America, and in all other countries where men have tried to build up prosperity on irredeemable paper.

All this breaking down of the manufactures and commerce of the nation made fearful inroads on the greater fortunes; but upon the lesser fortunes, and the little accumulated properties of the masses of the nation who relied upon their labor, it pressed with intense severity.

Still another difficulty appeared. There had come a complete uncertainty as to the future. In the spring of 1791 no one knew whether a piece of paper money representing a hundred francs would, a month later, have a purchasing power of a hundred francs, or ninety francs, or eighty, or sixty. The result was that capitalists feared to embark their means in business. Enterprise received a mortal blow. Demand for labor was still further diminished; and here came an additional cause of misery. By this uncertainty all far-reaching undertakings were killed. The business of France dwindled into a mere living from hand

[1] Von Sybel, History of the French Revolution, I, 281, 283.

to mouth. . . . Says the most brilliant of apologists for French revolutionary statesmanship, "Commerce was dead; betting took its place."

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But these evils, though very great, were small compared to those far more deep-seated signs of disease which now showed themselves throughout the country. The first of these was the *obliteration of thrift* in the minds of the French people. The French are naturally a thrifty people; but, with such masses of money and with such uncertainty as to its future value, the ordinary motives for saving and care diminished, and a loose luxury spread throughout the country. A still worse outgrowth of this feeling was the increase of speculation and gambling. With the plethora of paper currency in 1791 appeared the first evidences of that cancerous disease which always follows large issues of irredeemable currency, — a disease more permanently injurious to a nation than war, pestilence, or famine. At the great metropolitan centers grew a luxurious, speculative, stock-gambling body, which, like a malignant tumor, absorbed into itself the strength of the nation, and sent out its cancerous fibers to the remotest hamlets. At these city centers abundant wealth was piled up. In the country at large there grew dislike of steady labor and contempt for moderate gains and simple living.

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In the cities now arose a luxury and license which is a greater evil even than the plundering which ministers to it. In the country the gambling spirit spread more and more. Says the same thoughtful historian whom I have already quoted, "What a prospect for a country when its rural population was changed into a great band of gamblers!"

Nor was this reckless and corrupt spirit confined to business men; it began to break out in official circles, and public men who a few years before had been pure in motive and above all probability of taint, became luxurious, reckless, cynical, and finally corrupt. Mirabeau himself, who, not many months before, had risked imprisonment and even death to establish constitutional

government, was now — at this very time — secretly receiving heavy bribes: when, at the downfall of the monarchy a few years later, the famous iron chest of the Tuileries was opened, there were found evidences that, in this carnival of inflation and corruption, Mirabeau himself had been a regularly paid servant of the court. The artful plundering of the people at large was bad enough, but worse still was this growing corruption in official and legislative circles. Out of the speculating and gambling of the inflation period grew luxury, and out of this grew corruption. It grew as naturally as a fungus on a muck heap. It was first felt in business operations, but soon began to be seen in the legislative body and in journalism. Mirabeau was by no mean the only example.

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Yet even a more openly disgraceful result of this paper money was to come, and this was the decay of any true sense of national honor or good faith. The patriotism which the fear of the absolute monarchy, the machinations of a court party, the menaces of the army, and the threats of all monarchical Europe had been unable to shake, was gradually disintegrated by this same stockjobbing, speculative habit fostered by the new currency. At the outset, in the discussions preliminary to the first issue of paper money, Mirabeau and others who had favored it had insisted that patriotism, as well as an enlightened self-interest, would lead the people to keep up the value of paper money. The very opposite of this was now found to be the case. There now appeared, as another outgrowth of this disease, what has always been seen under similar circumstances. It is a result of previous evils and a cause of future evils. This outgrowth was the creation of a great debtor class in the nation, directly interested in the depreciation of the currency in which their debts were to be paid. The nucleus of this debtor class was formed by those who had purchased the Church lands from the government. Only small payments down had been required, and the remainder was to be paid in small installments spread over much time: an indebtedness had thus been created, by a large number of people, to the amount of

hundreds of millions. This large body of debtors, of course, soon saw that their interest was to depreciate the currency in which their debts were to be paid; and soon they were joined by a far more influential class, — by that class whose speculative tendencies had been stimulated by the abundance of paper money, and who had gone largely into debt, looking for a rise in nominal values. Soon demagogues of the viler sort in the political clubs began to pander to this debtor class; soon important members of this debtor class were to be found intriguing in the Assembly, — often on the seats of the Assembly and in places of public trust. Before long the debtor class became a powerful body, extending through all ranks of society. From the stock gambler who sat in the Assembly to the small land speculator in the rural districts; from the sleek inventor of canards on the Paris Exchange to the lying stockjobber in the market town, all pressed vigorously for new issues of paper; all were able, apparently, to demonstrate to the people that in new issues of paper lay the only chance for national prosperity.

This great debtor class, relying on the multitude who could be approached by superficial arguments, soon gained control. Strange as it may seem, to those who have not watched the same causes at work at a previous period in France, and at various periods in other countries, while every issue of paper money really made matters worse, a superstition steadily gained ground among the people at large that, if only *enough* paper money were issued and more cunningly handled, the poor would be made rich. Henceforth all opposition was futile. In December, 1791, a report was made in the Assembly in favor of a fourth great issue of three hundred millions more of paper money.

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On December 17, 1791, a new issue was ordered of three hundred millions more, making in all twenty-one hundred millions authorized. Coupled with this was the declaration that the total amount of circulation should never reach more than sixteen hundred millions. What such limitations were worth may be judged from the fact that not only had the declaration made hardly a year before, limiting the amount in circulation to twelve

hundred millions, been violated, but the declaration, made hardly a *month* before, in which the Assembly had as solemnly limited the amount of circulation to fourteen hundred millions, had also been repudiated. The evils which we have already seen arising from the earlier issues were now aggravated.

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The result was that on April 30, 1792, came the fifth great issue of paper money, amounting to three hundred millions; and at about the same time Cambon sneered ominously at public creditors as "rich people, old financiers, and bankers." Soon payment was suspended on dues to public creditors for all amounts exceeding ten thousand francs.

This was hailed by many as a measure in the interests of the poorer classes of people, but the result was that it injured them most of all. Henceforward, until the end of this history, capital was taken from labor and locked up in all the ways that financial ingenuity could devise. All that saved thousands of laborers in France from starvation was that they were drafted off into the army and sent to be killed on foreign battlefields.

In February, 1792, assignats were over thirty per cent below par. On the last day of July, 1792, came another brilliant report from Fouquet, showing that the total amount already issued was about twenty-four hundred millions, but claiming that the national lands were worth a little more than this sum. Though it was easy for any shrewd mind to find out the fallacy of this, a decree was passed issuing three hundred millions more. By this the prices of everything were again enhanced save one thing, and that one thing was *labor*. Strange as it may at first appear, while all products had been raised enormously in price by the depreciation of the currency, the stoppage of so many manufactories, and the withdrawal of capital, caused wages in the summer of 1792, after all the inflation, to be as small as they had been four years before, — namely, fifteen sous per day. No more striking example can be seen of the truth uttered by Daniel Webster, that "of all the contrivances for cheating the laboring class of mankind, none has been more effectual than that which deludes them with paper money."

Issue after issue followed at intervals of a few months until on December 14, 1792, we have an official statement to the effect that thirty-four hundred millions had been put forth, of which six hundred millions had been burned, leaving in circulation twenty-eight hundred millions. When it is remembered that there was little business to do, and that the purchasing power of the franc, when judged by the staple products of the country, was about equal to half the present purchasing power of our own dollar, it will be seen into what evils France had drifted. As this mania for paper ran its course, even the sous, obtained by melting down the church bells, appear to have been driven out of circulation; parchment money from twenty sous to five was issued, and at last bills of one sou, and even of half a sou, were put in circulation.

But now another source of wealth opens to the nation. There comes a confiscation of the large estates of nobles and landed proprietors who had fled the country. An estimate in 1793 makes the value of these estates three billion francs. As a consequence the issues of paper money were continued in increased amounts, on the old theory that they were guaranteed by the solemn pledge of these lands belonging to the state. Early in 1793 the consequences of these overissues began to be more painfully evident to the people at large. Articles of common consumption became enormously dear, and the price was constantly rising. . . .

The washerwomen of Paris, finding soap so dear that they could scarcely purchase it, insisted that all the merchants who were endeavoring to save something of their little property by refusing to sell their goods for the worthless currency with which France was flooded, should be punished with death; the women of the markets, and the hangers-on of the Jacobin Club, called loudly for a law "to equalize the value of paper money and silver coin." It was also demanded that a tax be laid especially on the rich, to the amount of four hundred million francs, to buy bread; and the National Convention, which had now become the legislative body of the French Republic, ordered that such a tax be levied. Marat declared loudly that the people,

by hanging a few shopkeepers and plundering their stores, could easily remove the trouble. The result was, that on the 28th of February, 1793, at eight o'clock in the evening, a mob of men and women in disguise began plundering the stores and shops of Paris. At first they demanded only bread; soon they insisted on coffee and rice and sugar; at last they seized everything on which they could lay their hands, — cloth, clothing, groceries, and luxuries of every kind. Two hundred shops and stores were plundered. This was endured for six hours, and finally order was restored only by a grant of seven million francs to buy off the mob. The new political economy was beginning to bear its fruits. One of its minor growths appeared at the City Hall of Paris, where, in response to the complaints of the plundered merchants, Roux declared, in the midst of great applause, that "the shopkeepers were only giving back to the people what they had hitherto robbed them of."

This mob was thus bought off, but now came the most monstrous of all financial outgrowths of paper money, and yet it was an outgrowth perfectly logical. *Maximum* laws were passed, — laws making the sales of goods compulsory, and fixing their price in paper money.

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The first result of the *maximum* was that every means was taken to evade the fixed price imposed; the farmers brought in as little produce as they possibly could. This caused scarcity, and the people of the large cities were put on an allowance. Tickets were issued authorizing the bearer to obtain at the maximum prices a certain amount of bread, or sugar, or soap, or wood, or coal, to cover immediate necessities.

It may be said that these measures were the result of the war then going on. Nothing could be more baseless than such an objection. The war was generally successful. It was pushed mainly upon foreign soil. Numerous contributions were levied upon the subjugated countries to support the French armies. The war was one of those of which the loss, falling apparently upon future generations, stimulates, in a sad way, trade and production in the generation in being. The main cause of these

evils was the old false system of confiscating the property of an entire nation; keeping all values in fluctuation; discouraging all enterprise; paralyzing all energy; undermining sober habits; obliterating thrift; promoting extravagance and wild riot by the issue of an irredeemable currency.

It has also been argued that the assignats sank in value because they were not well secured, — that securing them on government real estate was as futile as if the United States were to secure notes on its real estate in distant territories. This objection is utterly fallacious. The government lands of our own country are remote from the centers of capital, and difficult to examine: the French national real estate was near those centers — even in them — and easy to examine. Our national real estate is unimproved and unproductive: theirs was improved and productive; the average productiveness of that in market was quite five per cent in ordinary times.

It has also been objected that the attempt to secure the assignats on government real estate failed because of the general want of confidence in the title derived by the purchasers from the new government. Every thorough student of that period must know that this is a misleading statement. Everything shows that the French people generally had the most unwavering confidence in the stability of the new government during the greater part of the Revolution. . . .

On April 11, 1793, a law was passed to meet the case of those who bought specie with paper. Nothing could be more natural than such purchases. Husbands who wished to make provision for their wives, fathers who wished to make provision for their children, desired to accumulate something of acknowledged value, and enormous prices in paper were paid for gold. The new law forbade the sale or exchange of specie for more than its nominal value in paper, with a penalty of six years' imprisonment in irons.

It will doubtless astonish many to learn that, in spite of these evident results of too much currency, the old cry of a "scarcity of circulating medium" was not stilled; it appeared not long after each issue, no matter how large, and reappeared now. But

every thoughtful student of financial history knows that this cry always comes after such issues — nay, that it *must* come — because in obedience to a natural law there *is* a scarcity, or rather *insufficiency*, of currency just as soon as prices become adjusted to the new volume, and there comes some little revival of business with the usual increase of credit.

The cry of "insufficient amount of circulating medium" was again raised. The needs of the government were pressing, and within a month after the passage of the fearful penal laws made necessary by the old issues, twelve hundred millions more were sent forth.

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Month after month, year after year, new issues went on. Meanwhile everything possible was done to keep up the value of paper. In obedience to those who believed with the market women of Paris, as stated in their famous petition, that "laws should be passed making paper as good as gold," Couthon, on August 1, 1793, proposed and carried a law punishing any person who should sell assignats at less than their nominal value with imprisonment for twenty years in chains. Two years later Couthon carried a law making investments in foreign countries by Frenchmen punishable with death; and to make this series of measures complete, to keep up paper at all hazards, on August 15, 1793, the national debt was virtually repudiated.

But to the surprise of the great majority of the people in France, after the momentary spasm of fear had passed, the value of the assignats was found not to have been increased by these measures; on the contrary, they persisted in obeying the natural laws of finance, and as new issues increased, their value decreased in a constant ratio. . . . The issues of paper money continued. Toward the end of 1794 seven thousand million assignats were in circulation. By the end of May, 1795, the circulation was increased to ten thousand millions; at the end of July, fourteen thousand millions; and the value of one hundred francs in paper fell steadily, first to four francs in gold, then to three, then to two and a half. . . .

But even this could not stop the madness of inflation. New issues continued, until at the beginning of 1796 over forty-five thousand million francs had been issued, of which over thirty-six thousand millions were in actual circulation.

It is very interesting to note, in the midst of all this, the steady action of another simple law in finance. The government, with its prisons and its guillotines, with its laws inflicting twenty years' imprisonment in chains upon the buyers of gold, and death upon investors in foreign securities, was utterly powerless against this law. The louis d'or stood in the market as a monitor, noting each day, with unerring fidelity, the decline in value of the assignat; a monitor not to be bribed, not to be scared. As well might the National Convention try to bribe, or scare away, the polarity of the mariner's compass. On August 1, 1795, the gold louis of 25 francs was worth 920 francs; on September 1, 1200 francs; on November 1, 2600 francs; on December 1, 3050 francs. In February, 1796, it was worth in market 7200 francs, or one franc in gold was worth 288 francs in paper money. Prices of all commodities went up in proportion.

The writings of the period give curious details of these prices. Thibaudeau, in his "Memoirs," speaks of sugar as 500 francs a pound, soap, 230 francs, candles, 140 francs. Mercier, in his lifelike pictures of the French metropolis at that period, mentions 600 francs as carriage hire for a single drive, and 6000 francs for an entire day. Everything was inflated in about the same proportion, except the wages of labor: as manufactories closed, wages had fallen, until all that kept them up at all was the fact that so many laborers were drafted off into the army. From this state of things came grievous wrong and gross fraud. Men who had foreseen these results fully, and had gone into debt, were of course jubilant. He who in 1790 had borrowed 10,000 francs could pay his debts in 1796 for about 35 francs. Laws were made to meet these abuses. As far back as 1794 a plan was devised for publishing official "tables of depreciation" to be used in making equitable settlements of debts, but all such machinery proved futile. On the 18th of May, 1796, a young man complained to the National Convention that his elder

brother, who had been acting as administrator of his deceased father's estate, had paid the heirs in assignats, and that he had received scarcely one three-hundredth part of the real value of his share.[1] To meet cases like this, a law was passed establishing a "scale of proportion." Taking as a standard the value of the assignat when there were two billions in circulation, this law declared that, in the payment of debts, one quarter should be added to the amount originally borrowed for every five hundred millions added to the circulation. In obedience to this law a man who borrowed two thousand francs when there were two billions in circulation would have to pay his creditors twenty-five hundred francs when half a billion more was added to the currency, and over thirty thousand francs before the emissions of paper reached their final amount. This brought new evils, worse, if possible, than the old.

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While this system was thus running on, a new government had been established. In October, 1795, came into power the "Directory." It found the country utterly impoverished, and its only resource at first was to print more paper money, and to issue it even while wet from the press.

The next attempt of the Directory was to secure a forced loan of six hundred million francs from the wealthier classes; but this was found fruitless. Next a national bank was proposed; but capitalists were loath to embark in banking, while the howls of the mob against all who had anything especially to do with money resounded in every city. At last the Directory bethought themselves of another expedient. It was by no means new. It was fully tried on our own continent twice before that time, and once since, — first, in our colonial period; next, during our Confederation; last, by the recent "Southern Confederacy," — and here, as elsewhere, always in vain. But experience yielded to theory, plain business sense to financial metaphysics. It was determined to issue a new paper which should be "fully secured" and "as good as gold."

[1] For a striking similar case in our own country, see Sumner, History of American Currency, p. 47.

On February 19, 1796, the copper plates of the assignats were broken up, and it was decreed that no more assignats be issued; instead of them, it was decreed that a new paper money, "fully secured, and as good as gold," be issued, under the name of "mandats." In order that these notes should be "fully secured," choice public real estate was set apart to an amount fully equal to the nominal value of the issue, and any one possessing any quantity of the mandats could at once take possession of government lands to their full face value, — the price of the lands to be determined according to their actual rental, and without the formalities and delays previously established in regard to the purchase of lands with the assignats. In order to make the mandats "as good as gold," it was planned by forced loans and other means to reduce the quantity of assignats in circulation so that the value of each assignat should be raised to one thirtieth of the value of gold, then to make mandats legal-tender, and to substitute them for assignats at the rate of one for thirty. Never were great expectations more cruelly disappointed. Even before they could be issued from the press, the mandats fell to thirty per cent of their nominal value; from this they speedily fell to fifteen per cent, and soon after to five per cent. This plan failed, — just as it failed in New England in 1737; just as it failed under our own Confederation in 1781; just as it failed under the "Southern Confederacy."

To sustain this new currency the government resorted to every method that ingenuity could devise. Pamphlets were published explaining their advantages to people of every capacity. Never was more skillful puffing of a financial scheme. A pamphlet, signed "Marchant," and dedicated to "People of Good Faith" was widely circulated. In this Marchant took pains to show the great advantage of the mandats as compared with the assignats: how land could be more easily acquired with them than with assignats; how their security was better; how they could not by any possibility sink in value as the assignats had done. Even before the pamphlet was dry from the press, the depreciation of mandats had refuted his entire argument. Then, too, we have at work again the old superstition that there is

some way of keeping up the value of paper money other than by having gold ready to redeem as much of it as may be presented. The old plan of penal measures is again pressed. Monot leads off by proposing penalties against those who shall *speak* publicly against the mandats. Talot thinks the penalties ought to be made especially severe ; and finally it is enacted that any persons "who by their discourse or writing shall decry the mandats shall be condemned to a fine of not less than one thousand livres, or more than ten thousand ; and in case of a repetition of the offense, to four years in irons." It was also decreed that those who refuse to receive the mandats be fined the first time the exact sum which they refuse ; the second time, ten times as much ; and the third time, be punished with two years in prison. But here, too, came in the action of those natural laws which are alike inexorable in all countries. This attempt proved futile in France, just as it had proved futile, less than twenty years before, in America. No enactments could stop the downward tendency of this new paper, "fully secured," "as good as gold" : the laws that finally govern finance are not made in conventions or congresses.

On July 16, 1796, the great blow was struck. It was decreed that all paper, mandats and assignats, should be taken at its real value, and that bargains might be made in whatever currency the people chose. The real value of the mandats at this time had sunk to about five per cent of their nominal value.

The reign of paper money in France was over. The twenty-five hundred million mandats went into the common heap of refuse with the previous thirty-six billion assignats. The whole vast issue was repudiated. The collapse had come at last ; the whole nation was plunged into financial distress and debauchery from one end to the other.

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But when all was over with paper money, specie began to reappear, — at first in sufficient sums to do the small amount of business which remained after the collapse. Then, as the business demand increased, the amount of specie flowed in from the world at large to meet it, and the nation gradually recovered from that long paper-money debauch.

Thibaudeau, a very thoughtful observer, tells us in his "Memoirs" that great fears were felt as to a want of circulating medium between the time when paper should go out and coin should come in; but that no such want was ever felt — that coin came in as if by magic — that the nation rapidly recovered from its paper-money debauch, and within a year business entered a new current of prosperity.

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I have now presented this history in its chronological order, — the order of events: let me, in conclusion, sum it up in its logical order, — the order of causes and effects.

And, first, in the *economic* development. From the first careful issues of paper money, irredeemable but moderate, we saw, as an immediate result, apparent improvement and activity in business. Then arose the clamor for more paper money. At first new issues were made with great difficulty; but, the dike once broken, the current of irredeemable currency poured through; and, the breach thus enlarging, this currency was soon swollen beyond control. It was urged on by speculators for a rise in values; by a thoughtless mob, who thought that a nation, by its simple fiat, could stamp real value upon a valueless object: as a consequence, a great debtor class grew naturally and rapidly, and this class gave its influence to depreciate more and more the currency in which its debts were to be paid. All the energy of the government was devoted to grinding out still more paper; commerce was at first stimulated by the difference in exchange; but this cause soon ceased to operate, and commerce, having been stimulated unhealthfully, wasted away.

Manufactures at first received a great impulse; but, ere long, this overproduction and overstimulus proved as fatal to them as to commerce. From time to time there was a revival of hope by an apparent revival of business; but this revival of business was at last seen to be simply caused by the desire of the more farseeing and cunning to exchange paper money for objects of permanent value. As to the people at large, the classes living on fixed incomes or salaries felt the pressure first, as soon as the purchasing power of their fixed incomes was reduced. Soon the great class living on wages felt it even more sadly.

Prices of the necessities of life increased; merchants were obliged to increase them, not only to cover depreciation of their merchandise, but also to cover their risk of loss from fluctuation; while the prices of products thus rose, wages, which had gone up at first under the general stimulus, fell. Under the universal doubt and discouragement commerce or manufactures were checked or destroyed. As a consequence, the demand for labor was stopped; laboring men were thrown out of employment, and under the operation of the simplest law of supply and demand, the price of labor — the daily wages of the laboring class — went down until, at a time when prices of food, clothing, and various articles of consumption were enormous, wages were nearly as low as at the time preceding the first issue of irredeemable currency.

The mercantile classes at first thought themselves exempt from the general misfortune. They were delighted at the apparent advance in the value of the goods on their shelves. But they soon found that, as they increased prices to cover the inflation of currency and the risk from fluctuation and uncertainty, purchasers were fewer, purchases less, and payments less sure; a feeling of insecurity spread throughout the country; enterprise was deadened and general stagnation followed.

New issues of paper were clamored for as a new dram is called for by a drunkard. The new issues only increased the evil; capitalists were all the more reluctant to embark their money on such a sea of doubt. Workmen of all sorts were more and more thrown out of employment. Issue after issue of currency came; but no relief save a momentary stimulus, which aggravated the disease. The most ingenious evasions of natural laws in finance which the most subtle theorists could contrive were tried,— all in vain; the most brilliant substitutes for those laws were tried; self-regulating schemes, "interconverting" schemes,— all equally vain. All thoughtful men had lost confidence. All men were *waiting;* stagnation became worse and worse. At last came the collapse, and then a return by a fearful shock to a state of things which presented something like certainty of remuneration to capital and labor. Then, and not until then, came the beginning of a new era of prosperity.

CHAPTER XVI

THE REGULATION OF A BANK-NOTE CURRENCY[1]

1. Circulation secured by Bonds

Whatever impedes the ability of a bank to furnish its currency, whether this currency take the form of notes or of deposits, must necessarily hinder it in the performance of its legitimate functions. As will be seen later the assessment of a tax upon the currency of a bank will increase the cost to the bank of furnishing its loans to the community. That is to say, so far as it results in a rise in the rate of interest, it means that the tax has been shifted by the bank to the borrower. From the side of the borrower it is clear that anything which interferes with the ability of the bank to make him a loan, and thus raises the rate of discount, is injurious to him. It is clear, then, that in the interest of the whole community the issue of bank currency should be as unrestricted as is consistent with safety.

In the United States the choice at present is supposed to lie between a bond-secured issue (bonds or securities of some sort being pledged for the redemption of the circulation) and a system in which the notes, like the deposits, are secured only by the general assets of the bank. Before considering, however, the bond-secured type of circulation as such, one point having special application to the banking system of the United States must be considered. The bonds at present required as security for circulation are national bonds. The people of the United States have become accustomed to the security of bank notes based upon the deposit with the government of national bonds. For thirty-five years this has furnished an absolutely safe bank

[1] By J. Laurence Laughlin. Reprinted, by permission of the author and of H. H. Hanna, from the *Report of the Monetary Commission of the Indianapolis Convention* [Indianapolis, 1900].

circulation. There is good reason why the people should have come to regard this system as highly satisfactory, and why there should be a strong belief that no other kind of security would be acceptable.

It is well understood, however, to be the traditional policy of the United States to pay off its bonded indebtedness. Since the close of the Civil War the reduction of the debt had gone on in a way to surprise the debt-burdened countries of Europe. Two thirds of the debt existing in 1865 has been paid off, and the amount of bonds now available for national bank circulation is not large. If we should return to the policy of the past and begin the payment of our national debt again, it is evident that United States bonds could not be used to provide a permanent and increasing bank circulation. Certainly, we may not seriously discuss the possibility that a debt of the United States would be purposely contracted or maintained merely in order that bonds might be provided with which to secure the notes of national banks.

Even if sufficient amounts of United States bonds were provided in the future, or if other kinds of bonds were deemed satisfactory, there would still be serious objections to the plan of a circulation secured by bonds.

First, any provision which obstructs the easy flow of loans from banks to customers in the particular form in which they wish to take their loans is a burden to the community. It works in much the same way as an increased cost of agricultural implements to farmers, who can accomplish results only at an increased cost, whether their tools cost them more, or whether their loans cost them more. Any means by which the notes are less obstructed will facilitate loans, and better serve the community which is dependent on notes.

To communities where the supply of loanable capital is inadequate to the demands, and where the rate of interest is correspondingly high, the system of bond security as a basis for note issue is especially disadvantageous for another reason. It deprives that community of a large amount of capital which it would otherwise have, in that it requires the banks in that

community to loan elsewhere at a low rate of interest (in the form of investments in bonds) large amounts which would otherwise be loaned to borrowers in the community in question. An illustration may make this clearer. The present capital of the national banks of Nebraska, Kansas, Alabama, and Texas is about $45,000,000; the deposits in those states are, roughly, $75,000,000. If the banks of these states were to issue notes under the present system to the amount of $36,000,000 (80 per cent of their capital) their accounts would stand somewhat as follows:

Circulation based on Present Bond Requirement

Resources		Liabilities	
Loans to community . . .	$81,200,000	Capital	$45,000,000
United States bonds[1] . . .	46,800,000	Surplus and undivided profits	12,000,000
Reserve (cash and on deposit)	40,000,000	Circulating notes	36,000,000
		Deposits	75,000,000
	$168,000,000		$168,000,000

If, however, the banks were not required to invest in bonds, they could loan to local borrowers not only the $81,200,000 possible under the present law, but also the $46,800,000 now required to be invested in bonds, leaving the account standing as follows:

Circulation based on Commercial Assets

Resources		Liabilities	
Loans to community . .	$128,000,000[2]	Capital	$45,000,000
Reserve (cash and on deposit)	40,000,000	Surplus and undivided profits	12,000,000
		Circulating notes	36,000,000
		Deposits	75,000,000
	$168,000,000		$168,000,000

This of itself would be objection enough to the system from the standpoint of our Western and Southern States; but when

[1] $20,000,000 4's of 1907 at 110; and $20,000,000 4's of 1925 at 124.

[2] The sum of the loans and the cost of the bonds under the bond-deposit requirement.

to this hardship that capital is taken away from their local borrowers and invested elsewhere in bonds is added the further disability which has been mentioned — that this outside investment must be at an exceedingly low rate of interest — it seems inexplicable that the system should have been permitted to exist as long as it has. It needs no argument to show that if one condition precedent to the establishment of a bank of issue in such a locality is that a greater or less amount of capital shall be loaned elsewhere at a rate of interest much lower than the local rate, the loss thus incurred will necessarily be made up by a higher rate of interest upon the capital which remains to be loaned at home.

A system of bond-deposit security will be a rigid system. It cannot respond to sudden needs. The relation of the price of bonds to the market rate of interest produces great difficulties in regard to the probable issue of bank-note circulation when it is needed.

It is well understood that changes may take place in the value of bonds due to changes in the credit of the government or to changes in the normal rate of interest, entirely outside of the control of the banks. As elsewhere shown, the profit of a bank on its circulation is diminished as the price of the deposited bonds increases, that is to say, as the rate of interest received on the bonds falls below the commercial rate. For this reason changes in the price of bonds may have a direct bearing upon the profit of circulation, and hence upon the volume of the notes which the banks will thereby keep outstanding. It may, therefore, be laid down as an undisputed fact that a system of bond-secured circulation is practically inconsistent with the automatic adjustment of the quantity of notes to the demands of borrowers and the needs of trade. When the demand for loans is great, there is little profit to be made in putting out notes; that is, when the demand is urgent, the supply is not forthcoming.

Also, an increase in the commercial rate of interest will lessen the relative profitableness of issuing notes secured by bonds paying a low and fixed rate of interest. At any given time, with

bonds at a definite price, the existing system makes the issue of notes profitable in those sections like New England, for example, where there is already an abundance of both currency and capital accompanied by low rates of interest, and unprofitable in those sections such as the West and South, where rates of interest are high and a real demand for more currency and capital exists.[1]

As already explained, the bonds are high-priced and bear a low rate of interest; and yet in times of financial stringency the rate of discount is sure to be high, and borrowers are in great need of loans. As against buying bonds bearing a low rate of interest in order to issue notes, there is the opportunity of loaning such funds directly at the high market rate of discount. The situation, therefore, puts a premium upon the direct use of banking capital, as against the method of investment which leads to increasing the bank-note circulation. In those communities where bank notes are essential to making discounts this is a serious obstacle. In short, at the time or place of pressing demand under the existing system the supply of notes is not forthcoming.

On the other hand, if the country is suffering from business depression, if funds are accumulating in the banks, and if the market rate of interest is low because there are few opportunities of profitably employing capital, then it would not be impossible to expect the banks to use superabundant funds in buying bonds of a low rate of interest. Therefore, at a time when the demand for loans is slight and the rate of discount low, it would be easy for the banks to invest in bonds and thereby obtain notes. In short, when there is no demand, the supply is easily obtained. It needs no further comment, consequently, to see that such a system of note issues works at cross purposes with the needs of the public. With a deposit of bonds for security of notes,

[1] It appears, for example, that in the New England States, where the commercial rate of discount is not over 5 or 6 per cent, the national banks find it profitable to issue in excess of the notes on the required deposit of bonds, more than half the amount which they might so issue; while in the Western and Southern States, the banks issue, in general, but little more than the amount of notes permitted upon their required deposit of bonds.

there is no supply of notes at a time when most needed and an abundant supply of notes when least needed.[1]

It should be noted that when the necessities of business urgently demand additional notes, even if the price of bonds should be such as to make the issue profitable, the delays incident to the purchase of bonds, the taking out of circulation upon them, etc., would make it impossible to obtain the currency until

[1] This has been clearly illustrated by the experience of the last half dozen years. "From 1882 until 1889 there was a pretty steady advance in the price of government bonds, the 4's of 1907 having risen from 103 in 1880 to 129 in 1889. In 1880 and 1881, while these bonds were selling between 103 and 112, there was some increase in the national-bank circulation; but their price touched 120 in 1882, and for nine years thereafter, the bonds being high-priced, there was a steady decrease in the note circulation of the national banks. The financial panic of 1890 caused a fall in the prices of government bonds, and thereby increased the chances of profit on the circulation of national-bank notes. As a result there was a net increase of $13,000,000 in their circulation in 1891, and of $8,000,000 in 1892. Now in these two years there was absolutely no demand for an increase in the circulating medium of this country; on the contrary, the Treasury Department in these years was injecting arbitrarily between $25,000,000 and $50,000,000 of silver paper money into the currency of the country, as a result of the Silver Purchase Act of 1890, and gold, in consequence, was being exported at a rate which alarmed business men and finally precipitated the panic in 1893.

"During 1893 the 4's of 1907 sold down to 113, and the banks added to their circulation $37,000,000. During the months of June, July, and August of that year there was a most urgent need for an expansion of the currency; but during these months the new national-bank notes did not appear. Not until after the panic was over and money was piling up in all the financial centers — a drug on the market — did the increase in the national-bank note circulation take place. As a result of the panic, business being depressed, the interest rate on prime commercial paper during 1894, 1895, and 1896 was between 3 per cent and 4 per cent. The money supply of the country was in excess of its needs and gold was exported in large amounts. The Treasury, embarrassed by the withdrawals of gold, was forced to issue bonds in order to maintain the gold reserve. These bond issues forced down the prices of bonds, and thus increased the profit which banks could make upon new circulation. Therefore, considerable idle banking capital, which could be loaned barely at 3 per cent in business, was exchanged for government bonds and made the basis for bank notes, so that in 1895 and 1896 there was a net addition to the bank-note circulation of $32,000,000. Thus the national-bank note helped to embarrass the government by inflating the currency at a time when the government was doing its utmost to hinder inflation and prevent the exportation of gold to Europe." — Professor Joseph French Johnson, in response to the interrogatories of the Monetary Commission.

all need for it was practically past. Under such a system, therefore, banks must refuse to customers additional supplies of notes upon sudden demand, even though the community in such circumstances has enlarged its currency need and an additional supply may, therefore, without additional strain on the bank, be kept in circulation. Under such circumstances, if notes are an essential to the borrower, rates for loans rise abnormally and crisis conditions are vastly intensified. Probably the best illustration of this delay in responding to demand was seen in the difficulty of obtaining currency during the summer of 1893, when it was practically impossible to secure a sufficient supply of a circulating medium of any sort. The New York banks held on June 1, 1893, a surplus of $21,000,000 in excess of their legal reserve. At that time the volume of national-bank notes outstanding was about $177,000,000. By the 1st of August extraordinary demands for currency had drawn down the reserves $14,000,000 below the legal minimum and yet the outstanding notes were only about $5,000,000 more than on June 1. By September 1, however, when the reserves were but $1,500,000 below the minimum, and the urgency was past and currency once more comparatively abundant, the notes had begun to expand and had already reached $199,800,000, subsequently rising to $209,300,000 on November 1, notwithstanding the continued decrease in the demand for them.

These considerations may be stated in three indictments of the system: (1) higher regular rates of interest; (2) inelasticity; (3) inconvenience and delay.

The explanations here briefly given sufficiently account also for the extraordinary fact in the history of the national banking system that from December, 1873, when the note circulation stood at $341,320,256, it pretty steadily diminished to October, 1890, when the amount outstanding was but $122,928,084. That is, in the face of a special stress, the bank-note circulation proved its maladjustment to the needs of the public by shrinking at the time when there was more work to be done.

2. Circulation secured by Commercial Assets

None of the objections previously noted are, of course, applicable to notes issued on the security of general commercial assets. It has been fully shown that a bond-secured circulation cannot furnish an elastic medium, expanding and contracting automatically. But it is quite otherwise with a currency which is based upon the general assets of the issuing banks. The volume of notes put forth under such circumstances will, like deposits, automatically expand in volume by being issued upon demand from legitimate borrowers, and automatically contract by being returned to the bank when the need for the currency is past. Under such a system any increase in the demand for money, and consequent higher rate of interest, adds to the inducement to issue notes, instead of making it less profitable as in the case of bond-secured currency.

There is, moreover, no delay or inconvenience such as exists where bonds must be purchased and deposited with the Treasurer before the notes can be issued. The assets on which the notes are based are the ordinary commercial paper acquired by the bank in the course of its regular business. The bank is thus always ready to increase its circulation if the public will use more notes, and all considerations of profit lead it to do so, as its power to loan will be increased in proportion as it is able to keep more notes in circulation. The same motives acting on all the banks lead to active competition, which, as explained elsewhere, results in the prompt redemption of all notes deposited or paid into any bank.

The greater comparative elasticity of a system of bank currency based on general assets over one based on deposit of bonds, is shown not merely by a comparison of the national-bank system with foreign systems based on general assets, but even more sharply by an examination of the results of the two systems when existing side by side in New York, prior to 1860. In that state the so-called "Safety Fund Banks" were free to issue notes upon their general commercial assets; while the "free banks" were obliged to deposit with state officials either

United States or state bonds, or bonds and mortgages. Because the rate of interest which these investments bore was not very much less than the commercial rate, the inelasticity of the bond-secured currency in New York was not as great as that of the national banking system. Yet, as compared with the circulation issued by the safety-fund banks upon commercial assets, it was so rigid as to make its inferiority in this regard perfectly manifest.

Another result of a system of bank currency based on general assets — indeed a corollary of what has just been stated — is that each community is thereby enabled to furnish for itself most easily and economically just such a currency as it requires for the convenient transaction of its business. The rural districts are not forced to go to more expense in creating their currency — notes — than are the commercial centers in creating that which they use — deposits.

Then, again, where commercial paper is accepted as the basis for the notes the banks are not obliged to withdraw from the community for investment in bonds a large portion of their funds. The local borrowers thus get the benefit of having offered to them the capital which a bond-secured system requires to be invested in bonds. For sections where notes, as distinguished from deposits, constitute the important part of the currency, this is equivalent to a large increase in the capital offered to borrowers, and results in a consequent lower interest.

Considerations of elasticity, the greater facility given for the prompt and automatic adaptation of the supply of currency to varying demands, the larger opportunities afforded to every rural community to furnish for itself easily and economically the currency which it needs for the convenient transaction of its business, and the ability given to banks to loan more freely to local borrowers, thus favor the issue of bank notes upon the general assets of the bank as distinguished from the system of bond security.

The only arguments which have been seriously opposed to this plan have been based on the fear that the security provided by general commercial assets would not be equal to that afforded

by bonds. The validity of the objection depends entirely upon the character of the assets. Of what, then, do the ordinary assets of banks consist, and what is their amount and character? In this connection it is neither necessary nor proper to consider any one bank apart from the others; for, under the plan proposed in this report, the notes of each bank are secured not only by its own assets, but also, if those assets should prove insufficient, by such portion as might be necessary of the assets of all the other banks. It is, therefore, the general question of the character of bank assets as a whole with which we are concerned. These assets are the result of loans made by the banks to those carrying on the business of the country; they represent in the main marketable products or commodities in the process of exchange and distribution. They are made by bankers whose interest it is to see that they are sound, inasmuch as the first loss, if any, must fall on the bank and its stockholders. These assets, therefore, are based on and secured by the best business of the country; their character rests on that which is a condition precedent to all solvency, individual, corporate, and governmental. Should the time ever come, in this or any other country, when the best business assets were not worth on the average thirty-five cents on the dollar, a time will have come when government and municipal bonds will likewise be practically valueless. It is conceivable that a government may become bankrupt while the great portion of the private business of the country remains solvent; indeed, this has occurred. But it is not conceivable that the bulk of the private business of a country can become worthless and the government of that country remain solvent; this has never occurred. These considerations make it clear that, taken in the aggregate, there can be no safer security for bank notes than that afforded by the combined commercial assets of the issuing banks. No revulsion which has ever taken place in this or any other country of similar commercial development has been so serious that it would have impaired the value of notes secured by such assets.

Under the plan proposed by the Commission the resources behind the notes would be much greater than is usually supposed.

The present capital of all national banks is $631,488,095; and if notes should be issued by all of them to the amount of 80 per cent of their unimpaired capital, the aggregate would be $505,190,476, for which the security in the form of total assets would be $4,011,403,513,[1] or a protection of nearly 8 to 1. But, it will be said, not all banks will issue notes to this limit; and this will be done mainly by the banks outside of reserve cities. The present capital of the 3276 banks outside of reserve cities (though including some cities of considerable size) is $401,302,835; of which 80 per cent would be $321,042,268; for which the security in the form of total assets would be $1,956,216,503, or $6.10 to every $1 of notes.

There can be no question, then, that in the aggregate the security behind the notes would be ample. It is for occasional banks where such would not be the case that the Guaranty Fund is provided. And, finally, the power of the comptroller to levy assessments as they may be needed to keep the fund good for this purpose insures that these occasional failures will cause no loss to the note holders.

If it should be thought that the security of a prior lien upon all the resources of a bank (instead of a part specifically invested in bonds) is insufficient for the protection of the note liability, attention is called to the fact that now over 90 per cent of the large exchanges of goods are performed by the media of exchange created on the basis of the deposit liability of banks; and that the protection to this liability has always been the general resources of the bank. An enormous volume of checks, drafts, and bills are daily in circulation, expanding with the expansion of business, constantly coming home for redemption and payment, always regarded as a safe medium of exchange, — and this circulation is protected solely by the general assets of the banks. When it is noted that deposit accounts of about $2,000,000,000 do a work of more than $50,000,000,000 (as shown by the

[1] With a note liability of $198,920,670, the actual assets now held by all the national banks amount to $3,705,133,707. Should their note issues be increased to $505,190,476, their assets would at the same time be increased by the same amount, making the aggregate assets behind the $505,190,476 of notes, $4,011,403,513, as stated.

clearings of the United States),[1] while the note circulation of the banks is only about $220,000,000, it must be admitted that there is nothing novel or unsafe in basing the smaller amount upon the same security as that of the greater, a security to which the community has long been accustomed. Not only are the note issues in the proposed plan secured by assets of the same kind, but they are given a prior lien on all this vast sum of resources. There is no reason, therefore, why the note issue of a bank should not be as good as, indeed much better than, its cashier's draft. No greater obstacles, with some obvious limitations, should be put in the way of the increase in the quantity of the one than of the other, and as rigid requirements should be exacted for the redemption and payment of the one as of the other. In this way notes will be used if transactions warrant their issue, and be presented for redemption, just the same as a cashier's check, immediately their work is done, thereby giving perfect elasticity.

The people of the United States have become accustomed to regard government bonds as the only safe security for bank issues. It should be clearly understood, however, that perfect security to the note holder has been obtained under the system proposed herein in certain sections of our own country in earlier times and in practically all the civilized nations on the continent of Europe to-day. It should be kept constantly in mind, also, that many losses, due to the inadequate security of bank-note issues in various parts of the country before the Civil War, came from a system in which the notes were secured by the deposit of bonds. The bonds used, however, were frequently

[1] The amount of checks and drafts annually passed through the clearing houses of the United States has for some years past ranged between $50,000,000,000 and $60,000,000,000. These clearings, however, represent only a portion of the checks actually used. There are many checks which never go through a clearing house at all, — being either deposited in the banks upon which they are drawn or, as is usual in the case of out-of-town checks, forwarded by mail for settlement.

Information furnished to the Commission by numerous banks indicates that the clearings represent no more than 75 or 80 per cent of the aggregate credit instruments actually used. So that instead of $50,000,000,000 or $60,000,000,000, the transactions annually carried on by means of this deposit currency probably amount to from $65,000,000,000 to $80,000,000,000.

state bonds, which by repudiation or bad legislation had depreciated or become worthless. It is the unmistakable testimony of our history before the Civil War that the security of bonds did not, by any means, protect the note holder.

Since the notes are protected not only by the general assets but by the combined guaranty of the other issuing banks in the system, there can be no question as to the security to the note holder. This point may be regarded as entirely disposed of.[1] The only question to be raised may, conceivably, be as to the willingness of the banks to go into a system in which a combined guaranty (by the guaranty fund) is created for the safety of the note holder. This question will be taken up and fully discussed in connection with the guaranty fund and the history of bank insolvencies, where it will be found that the possibility of loss to the banks by making such a guaranty is inconsiderable.

3. Guaranty Fund

Where the business of banking is not a monopoly, but is thrown open to any group of persons who may wish to enter it, that is, under a régime of so-called free banking, there will probably be a few failures from time to time. Under a system where the business is concentrated in a few hands, risks are less and those which exist are met by larger resources. Above all, the best of experience and business judgment is in charge of affairs. There is little more likelihood of the failure of the strong financial institutions of the world, such as the banks of France or England, than there is of the failure of all, or a large proportion, of the banks in the national-banking system, — an occurrence scarcely more to be anticipated than the breakdown of the whole business community itself. This absolute security, obtainable by committing the business of banking to one or to a few large financial institutions, is sacrificed under a system of free banking like our present one. This is the price paid for freedom of opportunity to engage in the business.

[1] Professor J. F. Johnson, *Annals of American Academy*, March, 1898, makes the objection to the Commission's plan that the notes are "too good."

It is easy to see why the note holder should be guaranteed security at the expense of the other creditors of the bank. It is not because of any inherent reason why notes should be preferred to the other liabilities, but chiefly because the notes in order to attain their highest usefulness to society must be made a universal currency. Deposits, although the same in their nature, need not, and indeed, cannot become such a universal currency, since each particular check and draft rests upon proof of the depositor's possession of a credit to his order. Notes of banks of small capital would be subject to much the same limitations, unless made uniform by some mechanism which would secure their redemption under any circumstances. This would necessitate delay and expense in making the necessary investigation as to the character of each note, and would thus seriously interfere with their ability to perform their proper function in exchange. If occasional losses are certain to occur under a system of free banking, some means must be found whereby the notes of all banks, whether failed or not, will be maintained upon an equality. In this way only can bank notes become a currency of the highest usefulness.

A consideration of the nature of the bank note shows no reason on *a priori* grounds why its holder cannot be protected by the usual means of insurance against loss. The principle of insurance has now been applied to an immense variety of undertakings. Risks of all sorts are now provided against by insurance. The essential idea of the operation is the contribution by those who are engaged in any occupation of a small sum to defray losses to any of the contributors arising from a specified cause. This is sometimes done through the agency of a company which makes a profit upon the transaction, although often directly by those whose interests are involved. In either case the principle would be the same if carried out by those who are insured against loss. And although the cost of insuring the notes might for convenience be paid by the banks themselves, the principle here again would be the same as if it were paid by the note holders, since it might be shifted to them by the bank, in the shape of higher interest, unless the increase in credit

secured to the notes by the operation should result in an additional profit sufficient to compensate the bank for any extra expense involved. The principle of insurance can as a rule be applied only to those losses which are small in amount or recur regularly. It would be inapplicable if losses could not be estimated with some reasonable degree of certainty upon the basis of past experience, so that the amount to be contributed by the individuals concerned could be accurately gauged. Banking experience, however, has been comprehensive enough to afford a basis for calculation. The principle of insurance has in several instances been actually applied to banking in the shape of a safety fund used to guarantee the note holder against loss.

Probably the earliest example of a safety fund for the security of the note holder is found in New York. The act of April 2, 1829, established upon the recommendation of Governor Van Buren a so-called "Bank Fund." This fund was to be created by an annual payment to the state by each note-issuing bank in the system of a tax of one half of 1 per cent of its capital stock, until these payments should have aggregated 3 per cent of the capital stock. The fund was to be invested by the state and was to be utilized to make good to creditors any failure of the assets of insolvent banks to meet the banks' obligations. Whenever the fund should become reduced by insolvencies, it was to be restored by annual contributions of one half of 1 per cent of the capital of the banks of the system until it should reach its original size. The fund was thus intended as a guaranty for the deposits as well as for the notes.

The act establishing the Safety Fund was subsequently modified in several very important particulars. Provision for the immediate redemption of the notes of failed banks, whenever the liabilities in excess of the assets of such banks should not amount to more than two thirds of the fund, was adopted in 1837. The fund as thus established was first drawn upon in 1837, after it had been in existence for eight years. Losses arising from several failures of minor importance were successfully met from the fund and reimbursed to it from the banks' assets. But it was not until the years 1840–1842 that the fund

was really put to a test. In the meantime several of the banks which had been chartered in the speculative period 1835–1837, and which, going into business at such a critical time, had become heavily involved in speculative transactions, found themselves unable to place their business upon the sound basis which legitimate banking demanded. The result was eleven serious bank failures in the years 1840–1842, which drew attention to some of the defects of the law and led to its amendment. In 1842 it was provided that thereafter the fund should be used only for the redemption of the notes of failed banks (and no longer as a guaranty for deposits), after the liquidation of losses already incurred.[1]

[1] In the liquidation of the eleven banks which failed in 1840–1842 and threw so heavy a burden on the Safety Fund, it appeared that only two (the Lafayette Bank and the Oswego Bank) succeeded in paying all their creditors in full without resort to the Safety Fund. The amounts collected by the receivers of the other banks prior to December, 1845, and the amounts paid from the fund for notes and for other debts of such banks, together with amounts subsequently realized, were as follows:

	Collections from assets to December, 1845	Payments from Safety Fund		Subsequent collections from assets
		In redemption of notes	Payment of other debts	
1. City Bank of Buffalo	$166,576	$317,107	—	$99,996
2. Wayne County Bank	56,744	113,131	$16,078	—
3. Commercial Bank of New York	303,339	139,837	146,129	7,188
4. Bank of Buffalo	82,837	435,540	149,241	—
5. Commercial Bank of Buffalo	172,864	186,861	424,515	5,000
6. Commercial Bank of Oswego	80,853	163,162	78,351	2,392
7. Watervliet Bank	19,459	134,107	77,484	13,259
8. Clinton County Bank	76,019	71,896	156,257	—
9. Bank of Lyons	37,445	52,898	40,053	3,960
Not specified	—	725	—	6,482
Totals	$996,136	$1,615,264	$1,088,109	$138,277

From this statement it appears that the collections from the assets of the Commercial Bank of New York were much more than enough to meet its notes; while those from the other banks, if applied to the payment of their notes, would have reduced the total net payments of notes out of the Bank Fund to $651,541. Of this sum, however, $252,647 was represented by notes issued by the Bank of Buffalo and the City Bank of Buffalo in excess of the $500,000 which those banks were authorized to issue.

These losses, however, were so great as to necessitate the payment of about $1,600,000 for notes and $1,100,000 for other debts. As the fund at this time amounted to only about $900,000, it became necessary, in order to meet these obligations, to issue stock payable from future contributions of the banks to the fund. The amount of the fund in any case was altogether too small to provide insurance against losses on both notes and deposits, which might occur in the course of business; while the failure, up to this time, to make the notes a preferred lien on the assets, and to impose an individual liability on the stockholders, threw upon the fund a burden which it should not have been obliged to assume.

In devoting the fund solely to the redemption of the notes, therefore, a step in the right direction was unquestionably taken. But it did not go far enough. More important were the provisions of the constitution of 1846 giving the holders of the notes of an insolvent bank a first lien upon its assets and making the stockholders individually liable for an amount equal to the stock held by them. The banks had also, in the beginning, been allowed to issue notes subject only to very loose restrictions as to quantity. The result was that notes were overissued in several cases, and the Safety Fund was actually called upon to redeem over $250,000 of notes issued in excess of the maximum authorized. The safety-fund system was perfected in this particular by the act of 1843, which provided for the printing and registry of notes by the comptroller, — all note-issuing institutions being compelled to give up their old plates.

As already noted, however, before these amendments were made, a number of serious failures had not only exhausted the fund, but had made heavy drafts upon future contributions for that purpose. Yet an examination of the facts developed in this experience makes it clear that if the Bank Fund had from the beginning been applicable only to the notes (as after 1842), and if the notes had been originally given a first lien on the assets of the issuing banks (as they were after 1846), and if it had been made impossible for any bank to put in circulation more notes than were authorized by law (as it was after 1843), the

total draft upon the Bank Fund on account of these eleven bank failures in 1840-1842 — serious as they were — would have been less than $400,000. That is to say, they would not have exhausted one half of the Bank Fund at that time available.

From the renewal in 1841 of the annual payments to the Bank Fund ($\frac{1}{2}$ per cent per annum on capital), all subsequent contributions for twenty-five years were mortgaged to secure the payment of the principal and interest of the stock issued in 1845 [1] to cover the losses already referred to, the greater part of which under a proper system would not have fallen on the Safety Fund at all. Consequently, in this period, there was really no security for note holders except that involved in the provisions limiting the circulation, making the stockholders liable, and giving the note holders a first lien. But even without any further guaranty, the loss to the note holders was slight. Of five banks which failed in the subsequent history of the system, one paid its notes in full without delay; three others collected enough from their assets to reduce their aggregate note issues from $508,535 to $37,057; while the fifth paid about $30,000 of its total issue of $125,000. The net loss, therefore, falling on a guaranty fund in this entire period subsequent to 1842, was only $129,499, which, for the whole twenty-four years, would have been considerably less than 1 per cent of the average capital; that is, less than one twenty-fourth of 1 per cent per annum.[2]

The experience of New York with a system of note issues based on general commercial resources — even complicated as it was with the speculative transactions of the years 1835–1839 — shows that in the whole history of the system the total loss

[1] By the act of April 28, 1845, the comptroller of the state was authorized to issue stock on behalf of the state, redeemable from subsequent contributions to the Bank Fund, with which to secure funds to settle at once with the creditors of the banks which had previously failed.

[2] These five bank failures were those of the Canal Bank of Albany, in 1848; the Lewis County Bank, in 1854; and the Bank of Orleans, Reciprocity Bank, and Yates County Bank, in 1857. The first redeemed its notes in full. The outstanding circulation of the Lewis County Bank at the time of its failure was $125,283; that of the other banks was: Bank of Orleans, $200,000; Reciprocity Bank, $159,577; Yates County Bank, $148,958. By 1866 the collections from

which would have been thrown upon the Safety Fund, if it had been originally established in its finally perfected form, would have been less than $550,000, an amount which would have been met by an average annual assessment of less than one tenth of 1 per cent upon the capital.

Other applications of the safety-fund principle to the guaranty of notes in the United States were to be found in the state-bank systems of Ohio and Iowa, which appear to have given entire satisfaction. Vermont, also, in 1831 adopted a system quite similar to that of New York, but a few years later permitted the banks to substitute in place of contributions to the common insurance fund, the personal bonds of the stockholders of any bank to redeem its notes.

The only banking system in which a guaranty-fund provision is actually incorporated at the present time is that of Canada. According to the terms of the banking law of 1890, the notes are made a first charge upon all the assets of the issuing bank, including the double liability of stockholders. In addition to this, banks are required to keep on deposit with the Minister of Finance a sum equal to 5 per cent of the average amount of their notes outstanding during the fiscal year preceding. In case of the suspension of any bank, its notes outstanding draw interest at 6 per cent from the date of suspension until the date set for their redemption. If such a day is not fixed by the directors of the bank within two months from suspension, the Minister of Finance is authorized to appoint a date upon and after which they will be redeemed from the redemption fund. Until the fund is made good from the assets of the failed banks, all the banks of the system are required to contribute in their due proportion at a rate not exceeding 1 per cent on their circulation each year.

the assets by the receivers had reduced the outstanding amounts to $7598 for the Bank of Orleans, $10,744 for the Reciprocity Bank, and $18,715 for the Yates County Bank.

In his report for 1867 the Comptroller of the State of New York stated the then outstanding circulation of these four banks to be $129,499. Notice was given that these notes would be redeemed from the surplus of the Bank Fund then remaining, and all that were presented were redeemed in full. Many of them, however, were never presented.

Since the establishment of this system in 1890 but two bank failures have occurred. In the case of the second failure, the notes of the bank were redeemed by the bank itself, without recourse to the redemption fund. In the case of the earlier one, the liability at the end of two months fell upon the redemption fund, though even here no notes were really presented for redemption from it. No doubt, however, was felt concerning the goodness of the notes, and inasmuch as they drew interest at 6 per cent from the date of suspension, they were regarded rather favorably as an investment, and were readily received by banks and others.

The successful working of insurance against loss upon bank notes, as embodied in the safety-fund idea, has thus been shown to be possible by experience. In the instances just cited, it either succeeded absolutely in securing note holders against loss, or demonstrated its ability to do so if properly applied and supplemented by adequate auxiliary measures, such as limitation of note issue, stockholders' liability, and a first lien on assets in favor of notes.

We need not, however, depend solely upon actual experience in the case of banking systems which have put the principle specifically into operation. The theory of insurance is sufficiently worked out to allow a judgment as to the possibility of its application to any class of risks, provided only that adequate statistics upon which to base a judgment can be found. With the safeguards and precautions which are being increasingly thrown about the business of banking, it is improbable that in the future failures of national banks would exceed those of the past. Even though, under the plan proposed in this report, a stimulus might be given to the establishment of banks in sections where business conditions were so unsettled as to make the danger of failure greater than the past average, this possibility of an increase of failures will unquestionably be more than offset by the general improvement due to the more rigid and thorough investigations provided for. With the discretion lodged with the comptroller, no bank can be started where it is not clearly shown that the bank is established in good faith and that the capital has been

fully paid up. The names of the directors must be given, and the comptroller will be in a position to refuse his approval of any application where the directors are not men of good reputation. There will thus be no more opportunity for fraud than under the present system. Our past experience, therefore, offers sufficient data upon which to base a judgment regarding the applicability of the insurance principle in the form of a safety fund to guard against losses to note holders under the proposed system. The results of an examination of this experience will be given elsewhere in the section on Insolvency of National Banks.

The guaranty-fund provision recommended by the Commission may be briefly described as follows :

Each bank must at all times maintain on deposit with the Division of Issue and Redemption an amount in gold equal to 5 per cent of its outstanding circulation. This will most naturally be administered precisely as the 5 per cent redemption fund is now. At the start each bank will be required to put up an amount equal to 5 per cent of its outstanding circulation, and thereafter, when it takes out an additional amount of notes, it will be required to pay into the Treasury 5 per cent of such notes for its redemption fund, and another 5 per cent for the guaranty fund ; and whenever it returns any of its notes for cancellation, or deposits lawful money for their withdrawal, it will receive back from the Treasury 10 per cent of the amount of circulation so retired, — 5 per cent from each fund.[1]

[1] The considerations which led to this method of adjusting the fund were these. It seemed very desirable that the fund should, in the early years of the new system, be of sufficient size to inspire confidence in the redemption of the notes of every failed bank. The project to accumulate a fund by imposing an annual tax of ½ per cent, or 1 per cent, had, therefore, to be abandoned at the outset, since it would have left the fund small, and, possibly, insufficient in the early years.

Another favorite proposition has been to establish a fund by requiring each bank to contribute an amount equal to 3 per cent, or 5 per cent, of the circulation taken out, but making no provision for the return to the bank of any portion of such sum in case of the retirement of the circulation. This proposition likewise had to be abandoned, for it appeared that such an arrangement would tend to retard the issue of currency when demanded by temporary business needs ; for no bank which could not expect the additional circulation thus called for to remain outstanding for more than a few weeks, or at most a few months, would be willing to go to the expense of paying an assessment of 3 per cent outright

These contributions will aggregate a large sum, which will be available at all times for the redemption of the notes of any individual failed bank without the necessity of waiting until its assets are turned into cash. All notes of such a bank presented for redemption will be promptly paid from this fund, and the notes merely held in the Treasury as a part of the fund until they can be paid by the receiver from the assets of the bank. In the meantime they would be regarded as the investment of a portion of the fund. If, when the affairs of any failed bank were finally wound up it should appear that the total net collections had been insufficient to redeem all its notes, the other banks of the system would be assessed whatever amount would be necessary to meet the deficiency.

in order to get the notes. If the currency were outstanding for only two months, this would be equivalent to 18 per cent per annum, a rate which would make the issue of notes out of the question, and necessitate some makeshift such as resort to borrowing currency wherever it might be secured, as at present. Such a proposition therefore, if carried into effect, would have seriously hindered that proper adjustment of supply of currency to business needs which the Commission endeavored to bring about.

The Canadian system, in which the banks maintain throughout each year an amount equal to 5 per cent of the average outstanding circulation for the previous year, was also decided to be inapplicable, because with so many banks as there are in the national-banking system, and the great changes frequently taking place in their circulation, it would frequently happen under such a system, that a bank having in one year only a very small circulation, would be enabled to put out in the next year a very much larger amount of notes without increasing its contribution to the guaranty fund correspondingly.

CHAPTER XVII

INTERNATIONAL TRADE

1. The Balance of Trade[1]

The rapidity with which exports of American products have increased in recent years has served, naturally enough, to stimulate discussion concerning the unprecedented balance of trade which now stands in "favor" of the United States. Not a few writers seem to believe that the extraordinary excess of exports over imports has made our foreign trade peculiarly profitable to the country, and there has been a marked revival of some of those theories which are associated with the name of the mercantile school of the seventeenth and eighteenth centuries. Such conditions will justify renewed study of that time-worn topic, the "Balance of Trade."

I

Mercantilism arose in the period when the precious metals discovered in the New World began to find their way into circulation in the various countries of Europe. One cardinal tenet of the school was that the statesman must exercise special care to secure for his country a sufficient stock of treasure in silver and gold. Spain and Portugal received directly from their colonies the riches that the treasure ships brought each year from the Indies; but England and other countries, whose dependencies contained no mines of the precious metals, could, manifestly, obtain new supplies of specie only by way of trade. For this reason, an excess of exports over imports, which might be settled by an inflow of gold or silver, was considered a "favorable" balance of trade, and became an object of solicitude to statesmen and to writers upon economic subjects.

[1] By C. J. Bullock. Reprinted, by permission of the publisher, from the *North American Review*, July, 1901.

Two circumstances aroused endless discussion of the balance of trade in England from the early decades of the seventeenth century. The East India Company was obliged to export specie each year to pay for the goods it obtained from the East, where there was little demand for English products. Then the trade with France was believed to result in a balance unfavorable to England, so that it was thought that her traditional political rival was draining the country of its treasure. Partisans of the East India Company, such as Thomas Mun, insisted that the exportation of treasure to the East did no harm, because it was exchanged for products that were sold, at a still larger gain, in many countries of Europe ; but the unfavorable balance in the French trade occasioned serious anxiety. Several times commerce with France was absolutely prohibited ; and at all periods heavy duties were imposed upon the staple imports from that country. Yet this branch of trade was long viewed with jealous eye ; and writer after writer made elaborate calculations of the amount of treasure lost by the dealings with France, prophesying the utter ruin of the kingdom. "Make a law," they said, "to prohibit French trade : you need no wine and few of his commodities ; and France will grow poor, while we grow rich."

Meanwhile, various Tory writers, such as Child, North, and Davenant, less hostile to France, had argued that an unfavorable balance in dealings with a particular country need cause no alarm, because commerce with other countries resulted in a net excess of exports on the entire trade of the nation. But the theories of the mercantilists were not effectually controverted until the time of David Hume and Adam Smith. Hume contended that money, whenever the means of communication are open, brings "itself nearly to a level," and that its purchasing power cannot vary greatly in different nations. Spain and Portugal, he said, could not by any laws keep within their borders all the treasure brought from the Indies, since such a course would merely lower its purchasing power in those countries and hasten its export to other places where it would command more commodities. Prices south of the Pyrenees could not be much higher than in France, since otherwise gold and silver would

flow northward in exchange for cheaper products. He said that, if the various states of the old Saxon Heptarchy had maintained separate existences, each kingdom would have worried over the balance of trade. Moreover Hume attacked that insane "jealousy of trade" which marked the commercial relations of the various European states ; and insisted that, since a wealthy man or country is a better customer than a poor one, "the increase of the riches and commerce in any one nation, instead of hurting, commonly promotes the riches and commerce of all its neighbors."

It remained for Adam Smith to deal the death blow to the theories of the mercantilists. He contended that all natural trade is profitable, and that its profit consists, not in the specie it may bring into the country, but in the addition it makes to the annual produce of the land and labor of the nation. The mercantilists, he said, had prophesied the ruin, through an unfavorable balance of trade, of every commercial country in Europe ; and their forecasts had been discredited invariably. All the treasure that flowed from Peru and Brazil could not be retained by Spain and Portugal ; and every attempt of those countries to check the outflow of specie merely tended to increase prices and to give other nations "double advantage" in their commerce with the Peninsula, by raising the prices obtainable for imports sent thither, while making domestic products dearer and more difficult to export at a profit. Since the publication of the "Wealth of Nations" few economists have thought it necessary to trouble themselves over imaginary evils resulting from the balance of trade.

But recent developments in our foreign trade have led to the expression of views that differ but slightly, if at all, from the theories of the old mercantilists. We are said to be now creating a favorable balance of trade equal to $1300 for every minute of the day ; while England, Germany, and France are "writing a total of over one billion on the wrong side of the ledger" for each year's transactions. In foreign trade, we are told, it is, as in the philosophy of Mr. Micawber: "Annual income twenty pounds, annual expenditures nineteen six, result happiness.

Annual income twenty pounds, annual expenditures twenty pounds aught and six, result misery." Then we read passages like the following:

"Never before in the history of the United States were the profits from foreign business so large as in 1898 and 1899. By profits I mean the excess in value of the goods sold — that is, exported — over those bought — that is, imported."

When a country imports more than she exports, she is said to be "a loser by her foreign trade," and "all the great nations of the earth," with the exception of Russia and the United States, are declared to suffer enormous "losses" by importing more than they export. True, an occasional writer recognizes that our excess of exports is offset, to some extent at least, by invisible items of international indebtedness; while sometimes it is realized that the unfavorable balances of older countries mean cheaper food and raw material for the people, and represent also the return upon foreign investments of capital or the earnings of merchant marines. But the revival of mercantilist theories is sufficiently marked to deserve recognition as a general tendency in the thought of the day.

II

With this general subject of international trade, it is notoriously true that the average man does not look with great favor upon reasoning based upon principles of a general and abstract character; while immediate results or events lying upon the surface of things create a far more powerful impression than the ultimate consequences of underlying forces. For this reason, the attention of the reader is now invited to a survey of the foreign exchanges of the United States during the years that have elapsed since the establishment of American independence. By such a study of simple historical facts it may be possible to enforce more successfully than in any other manner some elementary truths concerning the real significance of the balance of trade.

A preliminary word is necessary regarding the sources of information. Statistics of international commerce always contain

an element of error, and this is especially true of the only data available for the early decades of our national existence. Prior to 1821 imports admitted free of duty were not reported at all, and the rest were not valued in a satisfactory manner, while the valuation of exports did not receive sufficient attention from the customs authorities. The statistics now accepted as official for this period were made up in 1835. Beginning in 1821, the annual reports on commerce and navigation were published with greater or less regularity, and there has probably been a constant improvement in the character of our commercial statistics. For many of the items, other than exports or imports of merchandise, that contribute to the international dealings of the United States, no official data are obtainable, and we are compelled to rely upon mere estimates that sometimes have a decidedly conjectural character. Precise computation, therefore, is impossible. The most that can be done is to demonstrate what the general tendencies have been in each epoch investigated.

1. The first period that we shall study extended from 1789 to 1820. It witnessed a rapid growth of our commerce up to the year 1807, when such events as the Embargo, Non-intercourse Acts, and the War of 1812 affected all industry most injuriously. After the restoration of peace in 1815, a period of wild speculation, fostered by an inflation of the currency, encouraged large importations of foreign products. These were viewed as a sign of prosperity while the "boom" lasted, but were styled an inundation of European goods as soon as the speculative fever abated. The reaction, however, lowered prices and checked the flow of imports, which decreased automatically from $147,000,000 in 1816 to $74,000,000 in 1820.

For the entire period of thirty-one years the estimated imports of merchandise and specie amounted to $2,350,000,000, while exports were placed at $1,839,000,000, an "unfavorable" balance of $511,000,000. Nor was this our only item of international indebtedness. Foreign capital was largely represented in the debt of the federal government, and had been invested in the stocks of the first Bank of the United States and in other enterprises. For interest on all such investments we owed, for

the entire period, a sum that is estimated at $200,000,000 or more. But the amount due for the excess of imports and the interest on foreign capital had been balanced readily by the earnings of our merchant marine. The tonnage of the ships registered for the foreign trade amounted for the entire period to 20,000,000 tons engaged in traffic for one year. One estimate places the "balancing power," or international earnings, of our shipping at $20,000,000 annually from 1789 to 1815; and another reckons the earnings at $800,000,000 for the period now under consideration. The neutral position of the United States during the wars that engaged the attention of Europe for so many years had enabled American vessels to carry the larger part of our exports and imports, besides earning large sums in trade between different foreign ports. By this means, therefore, we had paid our international indebtedness, and had been enabled probably to import a considerable net balance of gold and silver.[1] So far then from the country being drained of its money in payment for the balance of imported merchandise, the banks held not less than $20,000,000 of specie in the year 1820; while Gallatin and Crawford estimated that there had never been more hard cash in circulation.

The situation was analyzed correctly by Timothy Pitkin in 1817. He showed that a cargo of flour shipped to Spain in an American vessel would be valued at $47,500 at domestic prices, and would figure at this amount in the returns of our exports. If the flour were sold in Spain at the usual advance necessary to cover freight, insurance, commissions, and a fair profit, it might command as much as $75,000. Then if the proceeds from the sale were invested in a return cargo that would be valued at our customhouses according to the prescribed methods, the final result of the voyage would be the importation of commodities that exceeded very greatly the value of the original exports. Therefore he contended that, if the imports had not shown an excess, our ships would have incurred a loss on their voyages.

[1] The balance of $511,000,000 due on the excess of imports does not show the facts regarding the movement of specie, since the estimates do not separate the two items of merchandise and specie prior to 1821.

2. From 1821 to 1830 our commerce showed no material increase over the first period. For this decade imports of merchandise aggregated $729,000,000 and exports were placed at $694,000,000, an unfavorable balance of $35,000,000, which was slightly reduced by a net exportation of $2,400,000 in specie. The indebtedness of the country was increased still further by whatever sums were due to foreign investors. Although the United States was reducing its public debt and returning considerable amounts of capital to foreign owners, the states had begun to contract debts, and borrowed during the decade $26,469,000. We may assume, therefore, that the sums returned to foreigners by the federal government were reinvested in state securities, and that the annual interest charge against the country remained nearly stationary. Moreover Americans were beginning to indulge more extensively in foreign travel, so that a new item of indebtedness affected the exchanges. The sums expended by our travelers, however, were offset in part by the money brought here by immigrants, who numbered 150,000 during the decade.

Whatever the indebtedness of the country may have been on these various accounts, the earnings of our merchant marine sufficed to pay it, and to turn the exchanges in favor of the United States at the close of the period. After 1821 we have statistics showing the amounts of exports and imports carried in American and in foreign vessels. From this time the net result of the carrying trade can be computed upon the following basis. Since American consumers must bear the expense of bringing merchandise to this country, the freight charges on goods brought in foreign vessels will be reckoned as an element in our international indebtedness ; while the sums earned by American vessels in the import trade will be considered to have no effect upon the foreign exchanges. Similarly, with our exports, we shall estimate that other countries are indebted to the United States for freights on goods carried in American vessels, and that cargoes shipped in foreign bottoms may be omitted from our computations. Estimates of the probable proportion between freight charges and the values of the products carried

range from 10 to 15 per cent. We may therefore place the cost of ocean carriage at 12½ per cent; and this estimate may continue to be used until, for recent decades, it becomes possible to replace it by a better one.

From 1821 to 1830 exports carried in American vessels aggregated $666,090,000, on which the freight charges would be about $83,000,000; while imports brought in foreign bottoms were placed at slightly more than $51,000,000, which would be subject to a charge of something more than $6,000,000. Thus our merchant marine earned from foreign countries about $77,000,000, which would be somewhat increased by the profits from carrying goods between foreign ports. Again, therefore, our ships earned enough to balance the indebtedness incurred on other accounts; and in 1829 and 1830 the net imports of specie amounted to $8,400,000, while foreign exchange was quoted in favor of the United States.

3. The third period extends from 1831 to 1840. For the first six or seven years the country was engaged in an extraordinary speculative movement, which was followed by the inevitable reaction and business depression. Population advanced at a rapid rate, immigration became very large, and sales of public lands increased greatly. The state banks were enabled to expand their note issues from $61,000,000 in 1830 to $103,000,000 in 1835, the notes being used in payment for the lands occupied by settlers. Then in 1836 the federal government distributed $28,000,000 of surplus revenue among the states, this money finding its way into the banks, which increased their issues to $149,000,000 by the year 1837. Such an inflation of the currency raised prices and invited large importations of merchandise. Thus our imports rose from $62,720,000 in 1830 to $176,579,000 in 1836, while exports increased much less rapidly. When the speculative mania ended in the crisis of 1837 imports immediately decreased; but for the entire decade importations of merchandise exceeded exports by $159,700,000.

More than this, the movement of specie showed for the ten years an excess of imports amounting to $50,650,000; so that on these two accounts the balance of importations

was not less than $210,000,000. This sum was far larger than the earnings of our merchant marine, which amounted to $90,000,000. How shall we account for the unsettled balance of $120,000,000?

The explanation is found in the large investments of European capital that were placed in the United States during this period. Between 1830 and 1838 various states that had undertaken internal improvements created debts amounting to $147,835,000. For this purpose bonds were sold in other countries, and foreigners became indebted to America for the principal of the loans. Two circumstances, however, contributed to reduce the claims which the country held against foreigners on this account. The debt of the federal government, which amounted to $39,123,000 in 1831, had been paid in full by the year 1835; and a considerable part of these securities had been owned in Europe. As a result, foreign investors had been able to purchase some of the state bonds by the simple reinvestment of funds already standing to their credit in the United States. In the second place, no small amount of interest had accrued upon federal and state securities during the decade, and this item may have amounted to thirty or forty millions.[1] Foreign investors therefore owed the United States $147,835,000, less that part of the principal of the federal debt, and of the interest accruing upon all securities, for which this country was indebted to European capitalists. After making such deductions, it is evident that our large imports of merchandise and specie had been made necessary by the movement of foreign capital toward the United States.

4. The next decade opened with two or three years of continued depression, but conditions improved after 1844, and subsequently the foreign commerce of the country began to show a decided increase. In 1847 the exchanges were affected greatly by the famine that followed the failure of the potato crop in Ireland. This event caused a remarkable increase in our

[1] Lest this estimate should appear too small, it will be well to add that, of the $147,835,000 invested in state bonds, $107,823,000 was placed in this country after 1835.

exports of breadstuffs, which rose from $7,445,000 in 1845 to $53,262,000 in 1847. The result was that our exports of merchandise exceeded imports in the year last mentioned by $34,317,000. Such a sudden disturbance of trade caused a net importation of specie amounting to $22,214,000. This large inflow of money altered the condition of the exchanges; so that in 1848 imports increased by $26,000,000, while exports declined more than $18,000,000, and a balance of $9,481,000 of specie was exported.

From 1841 to 1850 the imports of merchandise aggregated $1,180,000,000, and exports were estimated at $1,195,000,000. Thus a small balance of something less than $15,000,000 stood to the credit of the United States. At the same time imports of gold and silver had exceeded exports by $21,830,000; so that the movements of merchandise and specie had reached approximately a condition of equilibrium. From this fact one would infer that the invisible items of exchange must show a similar balance. Now what are the facts?

The panic of 1837 had checked the growth of state debts. In 1841 the aggregate indebtedness of the state and local governments was not much more than $216,000,000. When the states retired from industrial undertakings the field was left open for business corporations, which constantly increased in number, and began to find in Europe a market for a part of their securities. Thus investments of foreign capital, which were estimated at $200,000,000 in 1840, were supposed to amount to $261,000,000 in 1853. For the decade they may have averaged $225,000,000, upon which the aggregate interest charges would amount to $135,000,000.

But this debt to holders of American securities was diminished by the $40,000,000 or $50,000,000 of new capital that sought investment in this country; so that our foreign indebtedness on this account was $85,000,000 or $95,000,000.

Upon the other hand, our merchant marine carried away from our shores exports that exceeded by $690,000,000 the imports that were brought to this country in foreign vessels. Therefore, on account of ocean freights, the United States was entitled to

a credit of $86,000,000, which would balance approximately the interest due to foreign holders of American securities. Cargoes carried by our ships between foreign ports increased the earnings of the merchant marine ; and were sufficient, perhaps, to balance any foreign outlays occasioned by the operations of our army during the Mexican War. Since specie exports exceeded imports in 1850 and 1851, we may conclude that some debts remained unadjusted at the close of this period.

5. In the ensuing decade our foreign commerce increased nearly 125 per cent over the figures for any previous period of equal length, and merchandise imports exceeded exports by $355,800,000.

Passing over, for the moment, the movement of specie, we find that state and local debts increased by $100,000,000 during the decade; while 21,000 miles of railroad were constructed, for which large amounts of iron rails were imported in exchange for newly issued securities. Foreign investments may have amounted to some $300,000,000 or $350,000,000, upon an average ; but it is difficult to secure any satisfactory estimates. The annual interest charges may have been some $18,000,000 to $21,000,000, and, if we deduct $80,000,000 for new investments, we may place the debt due to foreign capitalists at from $100,000,000 to $130,000,000 for the decade. Thus the United States was a debtor for $355,000,000 of imported merchandise, for $100,000,000 to $130,000,000 on interest charges, and perhaps for an unsettled balance from the year 1850.

To meet these claims the profits of the merchant marine proved wholly inadequate. The net earnings of our ships amounted to no more than $158,000,000. Evidently some new cause had been operating to disturb the exchanges, and to increase our obligations beyond the point where the earnings of our ships could establish an equilibrium.

We must now return to the movement of gold and silver. Upon the opening of the California mines our domestic gold output suddenly rose from insignificant proportions to $50,000,000 in 1850 ; and subsequent years showed a still larger product, which was several times as great as the amount secured annually

from all countries of the world prior to 1845. From 1851 to 1860 the aggregate production of gold in the United States equaled $550,000,000, and this was five or six times the estimated specie circulation of the country in any year before the discoveries in California. The money in circulation in 1850, including bank notes as well as specie, was no more than $285,000,000, or about $12 per capita. If the new gold could have been retained in the country, our circulating medium would have risen to $835,000,000 for the year 1860, or $26.60 per capita. Such a sudden inflation as this would have raised prices far above the level prevailing in other parts of the world, put an end to the exportation of many products, and attracted imports from all quarters of the globe. Therefore the new gold began to flow out of the country after prices had been raised to a point at which the import trade could increase sufficiently to produce this result; and from 1851 to 1860 we exported a net balance of $417,608,000. By 1860 our specie circulation had risen to $235,000,000, an increase of $81,000,000 in ten years; while the issues of bank notes had grown to $207,000,000, giving the country a supply of money that averaged $14.06 per capita. The United States had become one of the leading gold-producing regions, and the course of the exchanges was inevitably altered.

6. Even more instructive was the period that extended from 1861 to 1873. The fiscal year 1860 had been marked by great prosperity, and both exports and imports were larger than at any former time. But the Civil War wrought havoc with our foreign trade, which, in the space of two years, shrank to little more than one half of the proportions reached in 1860. Especially marked was the decline in our exports of cotton, which decreased from $191,800,000 in 1860 to an average of $11,700,000 from 1861 to 1865. But in 1863 the volume of foreign trade began to increase; and after the restoration of peace the expansion was very rapid.

In 1862 the federal government began to issue inconvertible paper, which produced an inflation of the currency, raising prices and intensifying the speculative movement naturally induced by

the enormous public expenditures for military purposes. The inevitable result was a large increase of merchandise imports, which rose from $243,000,000 in 1863 to $642,000,000 ten years later. While it is true, as Cairnes contended, that high prices in inconvertible paper would not tend to favor the growth of imports, because foreigners did not exchange commodities for depreciated greenbacks but received payment in gold, it is certain, also, that the speculative mania had raised gold prices somewhat above the level prevailing in other countries, so that the inflow of commodities was greatly stimulated. For the thirteen years ending in 1873 imports of merchandise aggregated $5,107,000,000, while exports were placed at $3,952,000,000, a balance of nearly $1,155,000,000 against this country.

But this was not the only account which foreigners held against the United States. Our merchant marine had suffered irreparable damage from the ravages of the Confederate cruisers, and the proportion of our foreign trade carried in American vessels had greatly decreased. For this entire period the imports brought to our shores in foreign ships exceeded the exports carried in our own vessels by $1,500,000,000. This gave rise to a debt of $187,500,000. For the first time in our history we were indebted to foreigners on account of the carrying trade; and the aggregate of our obligations for merchandise and freight amounted to $1,342,000,000.[1] Moreover, it was estimated by David A. Wells, in 1869, that American travelers were then spending $25,000,000 annually in foreign countries, and the money brought here by immigrants could not have counterbalanced such an outlay. But there were other international transactions that restored the exchanges to an equilibrium.

In the first place, the net exports of specie during the thirteen years had amounted to no less than $677,822,000, this sum representing nearly nine tenths of the output of our mines at this period. The rest of our foreign indebtedness was settled by the flow of European capital into the United States. From 1861 to

[1] The sum due for freight should, however, be considerably reduced, because many American vessels had been registered under foreign flags, and the earnings of such ships should not be credited to foreign account.

1863 there seem to have been large withdrawals of foreign investments on account of the disturbed conditions caused by the war; but during the next ten years the movement of capital turned in the other direction. The federal government had incurred an interest-bearing debt of $2,381,000,000, state and local indebtedness had increased by some $500,000,000, while 39,642 miles of railways had been constructed. Foreign investors were attracted by the securities issued for these purposes.

In 1868 Secretary McCulloch estimated the foreign investments at $850,000,000, exclusive of railway stocks. The following year Mr. Wells computed that $1,100,000,000 of federal and local securities were held in other countries, while $365,000,000 of European capital had been placed in railway and other enterprises. Even if this estimate was too large in 1869, we may be certain that not less than $1,500,000,000 of foreign investments had been made by 1873; because the inflow of capital had been very rapid during the interval, amounting to $100,000,000 for the first eight months of the latter year. Now if we place the withdrawals of the years 1861 and 1862 at $200,000,000, it may be considered that foreign capitalists were indebted to the United States for $1,300,000,000 on account of the principal of new investments. This debt would be decreased by the interest charges that had accrued prior to 1873, but the precise amount of this allowance cannot be determined. Remembering, however, that most of the capital came to the country after 1863 and that the interest was stated at $88,000,000 in 1869, we may estimate it as equivalent to some $80,000,000 annually for a period of six years. Thus the aggregate indebtedness of foreign investors would be reduced to about $820,000,000. This was the item, therefore, which, in addition to the $677,000,000 of specie exports, furnished the means of settling the enormous balance due on merchandise, freights, and travelers' expenses.

Manifestly, such a condition of the exchanges could not continue. Even if nothing had occurred to check the inflow of foreign capital, the growing interest charges would have exceeded ultimately the annual investment of principal. In 1869 Mr. Wells had prophesied that exports of merchandise must

increase, sooner or later, in order to pay for the interest accruing to European capitalists. More explicitly still, in 1873, Professor Cairnes wrote:

> These considerations lead me to the conclusion that the present condition of the external trade of the United States is essentially abnormal and temporary. If that country is to continue to discharge her liabilities to foreigners, the relation which at present obtains between exports and imports in her external trade must be inverted. . . . This, it seems to me, is a result which may be predicted with the utmost confidence. The end may be reached by an extension of exportation, or by a curtailment of importation, or by combining both these processes, but by one means or the other, reached it will need to be.

Proceeding a step further, Cairnes showed that the excess of exports over imports could not be established unless the high prices then ruling in this country should be materially lowered, or prices in Europe should show a considerable advance; and he considered it probable that the change would come about by a fall of prices in the United States sufficient to make importation more difficult and exportation more profitable. Such a decline of the price level would probably "come with a crash," so that he looked forward "to the immediate future of American trade as a period of much disturbance and fluctuation, culminating, it is possible, from time to time, in commercial crises." Before his book appeared, these prophecies were in course of literal fulfillment.

7. The last period extends from 1874 to 1896. In September, 1873, the whole fabric of ten years' speculation utterly collapsed, while prices fell to a point at which imports must decrease and exports could expand. In 1874, for the first time in twelve years, exports of merchandise exceeded imports; and this condition was maintained in eighteen out of the next twenty-two years. By the close of the fiscal year 1896 the exports for the entire period stood at $17,479,000,000, while imports were placed at $15,190,000,000, a favorable balance of $2,289,000,000. In addition to this, exports of specie showed an excess of $529,000,000 over imports; so that the United States was entitled to a total credit of $2,818,000,000. This meant simply that the country had assumed its normal position as a debtor nation on the various

items of invisible exchanges, and was paying annually something like $122,500,000 on such accounts.

In the first place, we owed foreign nations for interest upon a mass of invested capital, which was not less than $1,500,000,000 in 1874, and increased to some $2,000,000,000 before the close of this period. The rate of interest upon these investments decreased from 6 to perhaps 4 per cent, as the years passed, and may have averaged about 5 per cent. This would make the annual interest charge stand at $80,000,000 or $90,000,000 upon the average amount of capital invested; so that, for the twenty-three years, this country owed from $1,840,000,000 to $2,070,000,000. But this sum would be decreased by the new investments made during the period, which aggregated $500,000,000.

Secondly, our foreign merchant marine showed a continual decline, so that imports brought in foreign vessels exceeded exports carried in American ships by $9,267,000,000. At the present time it is thought that freight charges upon imports are about 10 per cent of the value of the cargoes, while upon exports the estimated charges are as high as 15 per cent. Upon this basis the net earnings of foreign ships would aggregate $805,000,000. This item of indebtedness tended to increase as the proportion of imports in American bottoms declined.

Finally, there were several kinds of debt that cannot be ascertained with much accuracy. In 1869 the annual expenditures of American travelers were placed at $25,000,000, but for recent years they have never been estimated at less than $50,000,000. Upon this account, however, a certain reduction should be made for the money brought into the country by immigrants and foreign travelers. Then it is known that considerable amounts of real estate are owned by foreign capitalists, and that the rentals upon such property are no small item. Also various foreign corporations, such as insurance companies, conduct a large business in this country; and their annual profits go to swell the volume of our international indebtedness. When all allowances are made for the uncertainty of the data, enough facts have been presented to account for the constant excess of exports of merchandise and specie from 1873 to 1896. At the close of the period under

consideration the invisible elements of indebtedness must have amounted to $80,000,000 interest upon $2,000,000,000 of foreign capital; $52,000,000 due to foreign ships; something less than $50,000,000 expended by American tourists; and indefinite sums that must have carried the debt up to $200,000,000 per annum.

III

From this survey of the progress of American commerce, certain important conclusions may be drawn concerning the theory of the balance of trade.

1. Exports and imports of merchandise may throw no light upon the movement of specie, so that a favorable balance may not result in an inflow of gold or an unfavorable balance cause an outflow. From 1831 to 1840 merchandise imports exceeded exports by $159,900,000, while the net imports of specie amounted to $50,650,000. On the other hand, from 1873 to 1896 a favorable balance of trade amounting to $2,289,000,000 was accompanied by a net exportation of $529,000,000 in specie.

2. Many items that are not included in the customs statistics enter into the determination of the foreign exchanges; and, over a period of years, all these elements regulate themselves in such a manner that the total credits of a nation equal the aggregate of the accounts upon which it stands a debtor.

3. Whether imports shall exceed exports or exports rise above imports, depends wholly upon the position of the country as a producer of precious metals, or as a debtor or creditor on account of the movements of capital, of the carrying trade, of foreign travel, and the like. If capital is seeking investment in a new country, as was the case in the United States from 1831 to 1837 and from 1863 to 1873, imports must exceed exports; and this condition will be desirable or undesirable according to the advantages or disadvantages of the situation that invites foreign investments. When the inflow of capital ceases, exports must be sent to pay for the interest that accrues each year; and a favorable balance of trade caused in this way will point simply to the fact that the country is able to pay its debts, and will not

indicate a peculiarly profitable condition of trade. If a country engages extensively in ocean carrying, imports of commodities will tend to exceed exports; and the unfavorable balance will be the measure of the profits derived from the merchant marine. Finally, in a country that mines an unusual quantity of the precious metals, gold and silver will be exported constantly to other nations where they are less abundant; and this will force larger imports of commodities. This was the condition produced by the Californian discoveries, and it continued until our growing indebtedness to foreign capitalists and ship owners exceeded the annual product of our mines and caused an enormous excess of exports after 1874.

4. In all cases the precious metals are used chiefly to pay balances, and they form but a very small element in the international exchanges. From 1821 to 1896 the merchandise exports and imports of the United States aggregated more than $53,000,000,000, while the entire shipments of gold and silver were less than $5,000,000,000.

All of these conclusions could be reënforced by a study of the commerce of other countries. In general, it is the younger and poorer nations that show an excess of exports over imports, while the opposite condition prevails in older countries that possess greater accumulations of wealth. Great Britain has had an enormous unfavorable balance of trade for many years, and must continue to do so as long as the earnings of her merchant marine and the interest on her foreign investments remain as large as they are at the present time.

The general conclusion is, therefore, that the movements of merchandise indicate nothing more than the position which a country occupies as a debtor or a creditor upon account of the invisible exchanges that form so important an element in international transactions.

But this statement of the case is not quite complete, and needs to receive one important qualification before it can be accepted by the practical financier. From his point of view an excess of imports or of exports is frequently a matter of great importance. Both domestic and foreign exchanges are conducted

by means of a complicated system of credit, the volume of which greatly exceeds the reserves of ready money that serve as its foundation. At those seasons of the year when our exports of staple products are largest, exchange usually turns in favor of this country, and gold imports are to be expected. At other seasons, when imports of merchandise are heaviest, exchange may turn in the opposite direction and cause an outflow of gold. Such fluctuations in the exchanges have always existed, and are natural and inevitable under any system of monetary or commercial policy; but they may be important to the world of finance.

A favorable turn in the exchanges that results in a temporary inflow of gold increases the reserves of the banks, making money plentiful and cheap in the financial centers; and such conditions are favorable to business activity. Upon the other hand, a movement of specie away from the country tends to decrease the reserves, harden the money market, and raise the discount rate. All this, however, is a matter of temporary importance if the currency of the nation is upon a thoroughly sound basis, and if the general condition of business is healthful. When gold imports lower the rate of discount, prices of merchandise and securities rise, and conditions are favorable for increased importations of foreign goods. Moreover this tendency is accentuated by the concomitant fall in the rate of sterling exchange, which increases the profits that importers derive from their transactions. The result is that the tide soon turns in the opposite direction, and the inflow of gold is checked automatically. When, however, exchange rises to the point that makes gold exports necessary, discount rates are increased, prices tend toward a lower level, foreign bills drawn against exports yield a larger profit, and trade is given a counter impulse that restores the equilibrium.

But the case may be different. If business has been moving onward upon a course of mad speculation, straining to the utmost the delicate mechanism of credit, an unfavorable turn of the foreign trade may cause exports of gold at a time when specie reserves are all too small to withstand such a strain. Thus it is

that panics are precipitated. If, in addition, the currency of the country is unsound, the importance of a rise in sterling exchange is greatly magnified. From 1878 to 1893 the United States was engaged in reckless experiments with its paper and silver money. The federal treasury had undertaken to circulate, at a parity with gold, a mass of debased currency the amount of which steadily increased under the operation of our laws calling for purchases of silver; while the banks, which had formerly supplied whatever specie might be needed for export, felt compelled in 1892 to draw upon the precarious gold reserve which the government endeavored to maintain. As soon as this occurred, every demand for gold needed in foreign shipments caused a drain on the slender reserve upon which the stability of our monetary system depended. Under such circumstances, an unfavorable turn of the exchanges was fraught with the direst peril.

But with these qualifications, the conclusions reached in the earlier part of our discussion will stand as correct beyond all reasonable doubt. There can be no greater error than to measure the advantages derived from the commerce of a nation by the excess of exports over imports, or to suppose that an unfavorable balance is a certain proof that the trade has become unprofitable. At the same time, a highly speculative market may well apprehend the consequences of an adverse turn in the exchanges; while a nation with an unsound monetary system will always be the sport of every fluctuation in foreign transactions. Moderation in business activity and the establishment of a standard of value that cannot be shaken, would rob the balance of trade of its last vestige of significance.

2. List's Argument for Protection[1]

I. General Principles

In the economical development of nations it is necessary to distinguish the following principal stages: the savage state, the pastoral state, the agricultural state, the agricultural and

[1] Extracts from List's National System of Political Economy (1841). American translation by G. A. Matile.

manufacturing state, and, finally, the agricultural, manufacturing, and commercial state.[1]

It is obvious that a nation possessing an extensive territory, enriched with varied resources and a numerous population, uniting agriculture and manufactures with an external and internal trade, is beyond comparison more civilized, politically more developed, and more powerful than any merely agricultural country. But manufactures constitute the basis of external and internal trade, of navigation, of an improved agriculture, consequently of civilization and political power; and should any nation succeed in monopolizing all the manufacturing activity of the world, and in checking all other nations in their

[1] Elsewhere List says concerning these economic stages: "In reference to political economy, nations have to pass through the following stages of development, — the savage state, the pastoral state, the merely agricultural state, and the state at once agricultural, manufacturing, and commercial. The history of industry in England exhibits more clearly than any other the transition from the savage to the pastoral state, from the rearing of cattle to agriculture, and from agriculture to the first attempts in manufacture and navigation; it shows also that this transition is favored and expedited by free trade with free cities and more advanced nations; and that a prosperous manufacturing industry, a considerable marine, and a vast external commerce, can be acquired only by the intervention and aid of government.

"The less agriculture has advanced, the more external trade has had to do in exchanging the surplus of agricultural products and raw materials of the country for articles manufactured abroad; the deeper a nation is plunged into barbarism, the more it requires the regimen of absolute monarchy, and the more free trade, that is, the export of agricultural products and the import of manufactured products, concurs in its prosperity and civilization.

"On the contrary, when agriculture and the other useful arts have been developed among a people, and when their social and political position has been improved, less advantage can be derived from the exchange of agricultural products and raw materials for foreign manufactured articles; and competition with more advanced manufacturing nations will prove injurious.

"It is only in similar nations, that is, in those possessing all the qualities, all the moral and material resources required to establish a home manufacturing industry, and to reach thus the highest degree of civilization, prosperity, political power, subject, however, to injury from competition with foreign industry already well advanced, that commercial restrictions for the purpose of creating and sustaining a manufacturing industry can be legitimate and successful; they are so only until that industry becomes strong enough no longer to fear foreign competition; and they are legitimate within that interval, only in the necessary degree to protect that industry in its foundations." — Ed.

economical development by reducing them to the mere production of agricultural commodities, raw materials, and other indispensable local productions, it would undoubtedly attain to very wide, if not to universal, dominion.

A nation that greatly values its independence and its safety must make a vigorous effort to elevate itself, as fast as possible, from an inferior to a higher state of civilization, uniting and perfecting as quickly as possible its own agriculture, manufactures, navigation, and commerce.

The transition from the savage to the pastoral, and from the pastoral to the agricultural state, as well as the first progress in agriculture, is very efficiently promoted by free intercourse among manufacturing and commercial nations. The elevation of an agricultural people to the condition of countries at once agricultural, manufacturing, and commercial can only be accomplished under the law of free trade when the various nations engaged at the time in manufacturing industry shall be in the same degree of progress and civilization; when they shall place no obstacle in the way of the economical development of each other, and not impede their respective progress by war or adverse commercial legislation.

But some of them, favored by circumstances, having distanced others in manufactures, commerce, and navigation, and having early perceived that this advanced state was the surest mode of acquiring and keeping political supremacy, have adopted and still persevere in a policy well adapted to give them the monopoly of manufactures, industry, and commerce, and to impede the progress of less advanced nations or those in a lower degree of culture. The measures enforced by such nations, taken as a whole, — the prohibitions, the duties on imports, the maritime restrictions, premiums upon exports, etc., — are called the protective system.

The anterior progress of certain nations, foreign commercial legislation, and war have compelled inferior countries to look for special means of effecting their transition from the agricultural to the manufacturing stage of industry, and as far as practicable, by a system of duties, to restrain their trade with more

advanced nations aiming at manufacturing monopoly. The system of import duties is consequently not, as has been said, an invention of speculative minds; it is a natural consequence of the tendency of nations to seek for guarantees of their existence and prosperity, and to establish and increase their weight in the scale of national influence. Such a tendency is legitimate and reasonable only so far as it renders easy, instead of retarding, the economical development of a nation; and it is not in opposition to the higher objects of society, — the universal confederation of the future.

As human association ought to be considered under two points of view, — the cosmopolitan, embracing all the human race, and the political or merely national, — every economy, private or public, ought to be considered under two different aspects, — the individual, social, and material power, by means of which riches are produced, and the interchangeable value of the products of industry. There are, consequently, a cosmopolitan economy and a political economy, a theory of interchangeable value, and a theory of productive power. These doctrines are distinct in their essence, and require to be developed separately.

The productive power of nations is not dependent solely on the labor, the saving, the morality, and the intelligence of individuals, or on the possession of natural advantages and material capital; it is dependent also upon institutions and laws, social, political, and civil, but, above all, on the security of their duration, independence, and power as nations. Individuals would be in vain laborious, economical, ingenious, enterprising, intelligent, and moral, without a national unity, without a division of labor and a coöperation of productive power. A nation cannot otherwise attain to a high degree of prosperity and power, or maintain itself in the permanent possession of its intellectual, social, and material riches.

The principle of the division of labor has been hitherto but imperfectly understood. Industrial production depends much less on the apportioning of the various operations of a manufacture among several individuals, than on the moral and

material association of those individuals for a common end. This principal applies not only to a manufacture or a rural industry; it extends also to every kind of national industry, — agricultural, manufacturing, and commercial.

The division of labor and the combination of productive power take place in a nation when the intellectual power is applied so as to coöperate freely and efficiently with national production, when manufacturing industry and trade are equally and harmoniously developed. A merely agricultural people in free intercourse with manufacturing and trading nations will lose a considerable part of their productive power and natural resources, which must remain idle and unemployed. Its intellectual and political culture and its means of defense will thus be limited. It can possess neither an important navigation nor an extensive trade; its prosperity, as far as it results from external commerce, may be interrupted, disturbed, or annihilated by foreign legislation or by war.

On the other hand, manufacturing industry is favorable to science, art, and political progress; it promotes the general welfare, increases population, public revenue, and the power of the country; it enables the latter to extend its influence to all parts of the world, and to found colonies; it sustains fisheries and navies, mercantile and national. By it only can agriculture rise to any high degree of efficiency and perfection. Agriculture and manufacturing industry united in the same nation, under the same political power, live in perpetual peace; they are disturbed in their reciprocal action neither by war nor by foreign legislation; they insure to a nation the continued development of its prosperity, civilization, and power.

Agriculture and manufacturing industry are subjected by nature to special conditions.

The countries of the temperate zone are especially fit for the development of manufacturing industry; for the temperate zone is the region of intellectual and physical effort. If the countries of the torrid zone are little favored in reference to manufactures, they possess, on the other hand, the natural monopoly of many precious commodities which the inhabitants

of the temperate climates greatly prize. The exchange of the manufactured products of the one for the commodities of the other constitutes a division of labor and a coöperation of productive power throughout the chief commercial nations, and mainly constitutes the great international trade of the world.

A country of the torrid zone would make a very fatal mistake should it try to become a manufacturing country. Having received no invitation to that vocation from nature, it will progress more rapidly in riches and civilization if it continues to exchange its agricultural productions for the manufactured products of the temperate zone. It is true that tropical countries sink thus into dependence upon those of the temperate zone, but that dependence will not be without compensation if competition arises among the nations of temperate climes in their manufacturing industry, in their trade with the former, and in their exercise of political power. This competition will not only insure a full supply of manufactures at low prices, but will prevent any one nation from taking advantage of its superiority over the weaker nations of the torrid zone. There would be danger and damage in this dependence only so far as manufactures, important branches of trade, foreign commerce, and maritime power should become the monopoly of a single nation.

Nations of the temperate zone possessing extensive territory enriched with varied resources have lost one of the richest sources of prosperity, civilization, and power, if they do not succeed in realizing a national division of labor and a coöperation of national productive power, as soon as they possess the necessary conditions, economical, intellectual, and social, for accomplishing it. By economical conditions we understand an advanced stage of agriculture which cannot be sensibly stimulated by the export of its products; by moral conditions, a high moral culture among individuals; by social conditions we mean legal security for citizens for their persons and properties and the free exercise of their moral and physical faculties, — institutions regulating and facilitating trade, and suppressing all restraints upon industry, liberty, intelligence, and morality, as, for instance, feudal institutions.

It is of the utmost concern for a nation uniting such advantages first fully to supply its own wants, its own consumption, with the products of its own manufactures; then to form direct connections progressively with the countries of the torrid zone, transmitting to them, upon its own vessels, its manufactured products, receiving in exchange their commodities. In comparison with this exchange of the manufactured products of the temperate for the agricultural productions of the torrid zone, other international trade is of a secondary importance, if we but except the trade in a few special articles, — wine, for instance.

The production of raw materials and commodities among the great nations of temperate climes has no real importance but in regard to internal trade. An uncultivated nation may at the beginning advance its agriculture by the exportation of wheat, wine, flax, hemp, and wool; but no great nation ever arrived at wealth, civilization, and power by such policy. It may be stated as a principle that a nation is richer and more powerful in proportion as it exports more manufactured products, imports more raw materials, and consumes more tropical commodities.

Productions of the tropics serve manufacturing countries of temperate climes not only as raw materials and alimentary commodities, but also, and especially, as stimulants for agricultural and industrial labor. The nation which consumes the greatest quantity of tropical commodities will always be that of which the agricultural and manufacturing production is relatively the most considerable, and that which consumes the greatest quantity of its own products.

In the economical development of nations by means of external trade, four periods must be distinguished. In the first, agriculture is encouraged by the importation of manufactured articles, and by the exportation of its own products; in the second, manufactures begin to increase at home, while the importation of foreign manufactures to some extent continues; in the third, home manufactures mainly supply domestic consumption and the internal markets; finally, in the fourth, we see the exportation upon a large scale of manufactured products, and the importation of raw materials and agricultural products.

The system of import duties, considered as a mode of assisting the economical development of a nation by regulating its external trade, must constantly take as a rule the principle of the industrial education of the country.

To encourage agriculture by the aid of protective duties is vicious policy; for agriculture can be encouraged only by promoting manufacturing industry; and the exclusion of raw materials and agricultural products from abroad has no other result than to impede the rise of national manufactures. The economical education of a country of inferior intelligence and culture, or one thinly populated relatively to the extent and the fertility of its territory, is effected most certainly by free trade with more advanced, richer, and more industrious nations. Every commercial restriction in such a country aiming at the increase of manufactures is premature, and will prove detrimental not only to civilization in general but the progress of the nation in particular. If its intellectual, political, and economical education, under the operation of free trade, has advanced so far that the importation of foreign manufactures and the want of markets for its own products have become an obstacle to its ulterior development, then only can protective measures be justified.

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If protective duties enhance for a time the price of domestic manufactures, they secure afterwards lower prices by means of internal competition; for an industry that has reached its full development can safely reduce its prices far below those which were necessary to insure its growth, and thus save to its consumers the whole expense of transportation and the whole profits of trade which are consequent upon imports of the same articles from other countries. The loss occasioned by protective duties consists, after all, only in values; while the country thus acquires a power by which it is enabled to produce a great mass of values. This loss in values must be considered as the price of the industrial training of the country.

Protective duties upon manufactured products do not press heavily upon the agriculture of a country. By the development of manufacturing industry the wealth, population, consumption

of agricultural products, rent, and exchangeable value of real estate are vastly increased, while the manufactured products consumed by farmers gradually fall in price. The gain thus realized exceeds, in the proportion of ten to one, the loss which agriculturists incur by the transient rise of manufactured products.

Internal and external trade flourish alike under the protective system; these have no importance but among nations supplying their own wants by their own manufacturing industry, consuming their own agricultural products, and purchasing foreign raw materials and commodities with the surplus of their manufactured articles. Home and foreign trade are both insignificant in the merely agricultural countries of temperate climes, and the external commerce of such lands is usually in the hands of the manufacturing and trading nations in communication with them.

A good system of protection does not imply any monopoly for the manufacturers of a country; it only furnishes a guarantee against losses to those who devote their capital, their talents, and their exertions to new branches of industry. There is no monopoly, because internal competition comes in the place of foreign competition, and every individual has the privilege of taking his share in the advantages offered by the country to its citizens; it is only an advantage to citizens as against foreigners, who enjoy in their own country a similar advantage.

But this protection is useful not only because it awakens the sleeping energies of a country and puts in motion its productive power, but because it attracts the productive power of foreign countries, including capital, both material and moral, and skillful masters as well as skillful men.

On the other hand, the absence of manufacturing industry in a nation long civilized, the productive powers of which cannot be sensibly excited by the export of raw materials and agricultural products and by the importation of foreign manufactures, exposes it to numerous and serious inconveniences.

The agriculture of such a country must necessarily suffer; for the surplus population which, in a great manufacturing

development, finds means of living in factories and creates a large demand for agricultural products, thus affording substantial profits to agriculture, will be reduced to the labor of the field; and thence will follow a subdivision of farms and a small culture, both as prejudicial to the power and the civilization of a country as to its wealth. An agricultural people consisting chiefly of proprietors of small estates can neither fill the channels of internal trade with large quantities of commodities nor furnish a large consumption for manufactured goods; in such a country every one is limited almost to his own production and his own consumption. In circumstances like these no complete system of communications can be established, and the immense advantages which they afford are lost to the country.

Hence ensues necessarily moral and material, individual and political, weakness. The danger is aggravated when neighboring nations pursue a different policy; some making progress in every respect, others retrograding; some hoping for a brighter future, the courage and enterprise of their people being aroused; the absence of hope extinguishing by degrees in others all courage, intelligence, and enterprise.

History is not without examples of entire nations having perished, because they knew not and seized not the critical moment for the solution of the great problem of securing their moral, economical, and political independence by the establishment of manufacturing industry and the formation of a powerful class of manufacturers and tradesmen.

II. National Division of Labor

Smith maintains that the division of labor is less applicable to agriculture than to manufacturing industry; he has, however, in his view, but one manufactory or but a single farm. He failed to extend his principle to entire districts or to whole provinces. In no place has the division of labor and the combination of the productive power more influence than when each region, each province, is able to devote itself exclusively, or at least chiefly, to any special branch of agricultural production

for which it is particularly fitted by nature. In one place wheat and hops succeed specially; in another, wine and fruit; in another, timber and pasturage for cattle. If each region pursues the same course of cultivation at the same time, it is evident that both labor and soil must be much less productive than if each make its chief crop that for which it is best suited by nature, exchanging severally the surplus of their special productions for the surplus of others having like natural advantages for the production of food or some special raw material. This division of labor, this combination of the productive power employed in agriculture, can be realized only in a country which has reached a high degree of development in all branches of industry, for there only can a strong demand exist for the very various products of agriculture; there only can a demand for the surplus products of agriculture be so certain and so considerable as to insure the producer a market at a suitable price during the year, or at least during the following year, for the whole surplus of his production; in such a country can sufficient capital be devoted to dealing in and providing proper storage for the products of the soil, such improved means of transportation, canals, railroads, lines of steamers, well-kept highways, as are indispensable for the conveyance of agricultural and other bulky products. It is solely by the aid of a good system of communications that provinces near, as well as remote, can effect an exchange of the surplus of their respective productions. When each province produces all it consumes there are few occasions of exchange, and consequently no need of expensive communications.

Let it be noted that the increase of productive power consequent upon division of labor and upon the combination of individual power begins in the private manufactory, and extends, finally, even to national associations. Manufacturing industry prospers in proportion as its labor is more divided, as its laborers are more closely united, and as the coöperation of the whole is better secured. The productive power of each manufactory is greater in proportion as the whole manufacturing industry of the country is developed in its ramifications, and as it is itself

more strictly connected with the other branches of manufacture. Agricultural power is productive likewise in proportion as agriculture is more strictly united by relations at once local, commercial, and political, with a manufacturing industry complete in its various branches. In proportion as general industry is developed, the separation of the labor of agriculture and the combination of its productive powers take the proper form and arrangement; and by these advantages it is carried to its highest degree of perfection. The richest nation, being that which possesses the greatest productive power, will be of course that which, upon its own territory, has carried its manufactures of every kind to the highest degree of productiveness, and the agriculture of which furnishes its population of manufacturers with the chief part of the food and raw materials requisite for their wants and business.

Let us now change the argument. A nation pursuing only agriculture and a few of the more necessary mechanical arts is without the first and principal division of labor among its citizens, and loses the most important half of its productive power; it even wants that division of labor which is so needful in the operations of special branches of agriculture. A nation with an industry so incomplete is less productive by half than one of well-arranged industry; with a territory of equal extent, or of even much greater extent, with an equal, or even greater, population, its productive power will yield perhaps scarcely a fifth, or even a tenth part of the material wealth which a country of well-arranged industry can produce; and that for the same reason that in a complicated manufacture ten persons can produce not only ten times more, but perhaps thirty times more than *one* alone, just as the labor of a man who has but *one* arm will not merely be one half less, but perhaps an hundredfold less than that of the man who has *two* arms.

This loss of productive power must be the more sensibly felt as machinery is better adapted to aid manufacturing labor, and less applicable to agricultural labor. A part of the productive power thus lost by an agricultural people will go to the profit of the nation from which they derive manufactured articles in

exchange for their crude products. Beyond this, however, there will be no further loss until the agricultural nation shall have reached that degree of civilization and political development necessary for the establishment of manufacturing industry. If it has not yet reached that degree, if it is still in a state of barbarism or semicivilization, if its rural economy has not advanced beyond its primitive simplicity, the importation of articles of foreign manufacture and the exportation of its crude products cannot but sensibly increase each year its prosperity, as well as awaken and increase its intellectual and social power. If that commerce is not interrupted either by foreign prohibition of raw materials or by war, or if the territory of this merely agricultural country is situated in the torrid zone, the advantage will be equal and considerable on both sides, and that according to the nature of things; for under the influence of such exchange such a nation may make greater advances and with greater security than if entirely left to itself. But when an agricultural nation has reached the highest point of its rural development, that is, as far as the aid of foreign trade can carry it, or if manufacturing nations decline receiving the productions of its soil in payment for manufactured articles, or if the active competition of manufacturing people in the markets of an agricultural nation should prove an obstacle to the growth of manufactures, then the agriculture of the latter is exposed to the risk of being seriously checked.

We regard agriculture as seriously checked when, for want of manufacturing consumers or a home market, all the surplus of the growing population is devoted to agriculture, consuming the whole agricultural product, emigrating at the age of manhood, or dividing the land among the existing cultivators until the share of each family becomes so small as scarcely to yield sustenance for the occupants, let alone any surplus for foreign trade. Under a well-devised development of productive forces, the largest portion of the increase of the population, as soon as they reach a certain degree of culture, betakes itself to the manufactories; the surplus of agricultural production goes, on the one hand, to supply the manufacturing population with food and

raw materials, and on the other, enables the agriculturists to buy not only manufactured products but the machines and implements which improved farming and the increased demand for its products require.

If these relations are established at the right time, the productive forces, agricultural and manufacturing, aid each other and permit an indefinite increase. The demand for agricultural products on the part of the manufacturing population will become very great, but agriculture will employ only so many laborers and the soil will be subdivided only so far as may be necessary to obtain the largest possible product. The surplus of this production will be the measure of the ability of the cultivators to consume the goods of the manufacturer. A progressive increase of this surplus will increase the demand for manufacturing labor. The agricultural population will continue to find vent for its increase in the manufactories, and the population of the manufactories will finally equal, if not surpass, that of the fields.

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Compare, for instance, the state of agriculture in the vicinity of a populous city with that in remote districts.

The latter is applied only to commodities which bear distant carriage, and which cannot be had in the market for which they are destined at a lower price and of better quality from lands near the market. A considerable portion of the proceeds of sale is absorbed in expenses of transport. The capital expended in reproduction of a crop is with difficulty replaced by any disposition which can be made of it. For want of good models and suitable instruction, the new processes, new implements, the improved modes of culture scarcely ever reach remote places. The laborers themselves, for want of stimulus and emulation, develop but feebly their productive power, and abandon themselves readily to inaction and carelessness.

In the neighborhood of a city, on the contrary, the cultivator is able to devote every field of his farm to the culture most appropriate to the nature of the soil, and the whole to that rotation most advantageous. He can cultivate with profit the utmost variety of products; vegetables, poultry, eggs, milk, butter, fruit,

and other articles, which the farmer remote from the market regards as insignificant incidents of his calling, yield to the labor of the former a large return. While the remote farmer is reduced to the mere rearing of cattle, the other is not only continually adding to the fertility of his land, but is making larger and continually increasing profits: he is thus encouraged not only to learn but to enter upon the most improved modes of agriculture. A multitude of objects of little or no value to the remote farmer, such as stones, sand, water power, become of immense value to him who is in the vicinity of a large city or a populous manufacturing district. Machines and implements of husbandry of the best kind, with ample instructions as to the best means of employing them, are ever at his disposal. He obtains readily the needful capital to improve his land. Proprietors and laborers are alike stimulated by the enjoyments which the city offers and industry places within their reach, by the emulation which it originates, by the facility which larger profits afford, to employ in the amelioration of their condition the whole of their intellectual powers.

The same difference with similar results exists between a nation, on the one hand, which unites upon its own territory agriculture and manufacturing industry, and one which, on the other, exchanges its agricultural products for articles of foreign manufacture.

III. Protection and Productive Forces

A purely agricultural region in a temperate clime permits, of course, the best portion of its natural resources to remain unemployed.

From not distinguishing between agriculture and manufacturing industry in the appreciation of the influence of climate upon the production of wealth, the School [1] has fallen, in regard to the advantages and disadvantages of protective measures, into important errors, upon which we cannot avoid enlarging though we have already indicated them elsewhere in general terms.

[1] I.e. the School of Adam Smith, advocates of free trade. — Ed.

To prove that it would be foolish to produce everything in any one country, the School asks if it would be reasonable in England or Scotland to think of producing wine in hothouses. Wine could no doubt be thus obtained, but it would be neither so good nor so cheap as that which England and Scotland can purchase by means of their manufactured products. For those who will not or cannot look more deeply into the real nature of things, the argument is plausible; and the School is indebted to it for a great part of its popularity, at least among the proprietors of vineyards and silk manufactories in France as well as among planters of cotton and traders in that article in North America. But examined closely, the illustration is without force, for the reason that restrictions operate in agriculture altogether differently from what they do in manufacturing industry.

Let us first notice their effects upon agriculture.

Let France repel from her frontier German cattle and corn, and what would be the result? First, Germany would cease to purchase French wines, and France would then derive so much less advantage from that portion of her lands which are devoted to the culture of wine. Fewer individuals would confine themselves to that culture, and consequently a less quantity of domestic food would be required for the consumption of the cultivators of the vine. The same would take place respecting the production of oil. France would then lose much more in other branches of her agricultural industry than she could save in a single department by favoring the prohibition of cattle, which do not spring up spontaneously and are very likely not more advantageous for the regions in which their production is thus artificially forced.

Such will be the results if we regard France and Germany as merely agricultural countries, and if we suppose that Germany will not retaliate. But such a policy must appear still more injurious if we consider that Germany, under the imperative law of her own interest, will also have recourse to restrictive measures, and that France is engaged in both manufactures and agriculture. Germany would impose higher duties, not only upon wine,

but upon other French agricultural products which she might produce herself, or could more or less do without, or obtain from other places ; moreover she would impose still heavier duties upon the importation of manufactures which cannot be produced there with benefit, but can be obtained elsewhere without recourse to France. Thus the damage which France would sustain by restriction is twice or three times more considerable than the advantage gained. The culture of the vine, of the olive, and manufacturing industry, can employ in France only as many individuals as the food and raw materials produced or imported by France can nourish and supply. Now we have seen that restrictions upon importation do not increase agricultural production, but only transfer it from one part of the country to another. Had a free career been left to the trade in these rival products, the importation of these products, and consequently the exportation of wine, oil, and manufactured goods would have constantly increased, as well as the population employed in the culture of the vine, and of the olive, and in manufactures ; since, on the one hand, food and raw materials would have been received in always increasing quantities, and, on the other, the demand for their own products would have been also increasing. The increase of that population would have excited a greater demand for food and raw materials, articles less easily imported from abroad, and of which agriculture in every land possesses a natural monopoly ; the agriculture of the country would of course in these circumstances have realized still greater profits. The demand for such agricultural products as are suited to the soil of France, would, under this régime of liberty, be much greater than that which has been artificially created by restrictions. One farmer would not have lost what another has gained ; the whole agriculture of the country would have gained something, and its manufacturing industry still more. Thus restriction has not increased, but has rather diminished, the agricultural power of the country, and it has, moreover, annihilated that manufacturing power which results from the development of the agriculture of the country and from the importation of raw materials from abroad. The only thing obtained by it was an

increase of prices for the advantage of the cultivators of one place at the expense of those of another, and especially at the cost of the general productive power of the country.

3. Bastiat's Criticism of Protectionism[1]

I. Abundance — Scarcity

Which is the best for man or for society, abundance or scarcity?

How, it may be exclaimed, can such a question be asked? Has it ever been pretended, is it possible to maintain, that scarcity can be the basis of a man's happinesss?

Yes; this has been maintained, this is daily maintained; and I do not hesitate to say that the *scarcity theory* is by far the most popular of the day. It furnishes the subject of discussions in conversations, journals, books, courts of justice; and extraordinary as it may appear, it is certain that political economy will have fulfilled its task and its practical mission when it shall have rendered common and irrefutable the simple proposition that "in abundance consists man's riches."

Do we not hear it said every day, "Foreign nations are inundating us with their productions?" Then we fear abundance.

Has not M. de Saint Cricq said, "Production is superabundant?" Then he fears abundance.

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Has not M. Bugeaud said, "Let bread be dear and the agriculturist will be rich?" Now bread can only be dear because it is scarce. Then M. Bugeaud lauded scarcity.

Has not M. d'Argout produced the fruitfulness of the sugar culture as an argument against it? Has he not said, "The beet cannot have permanent and extended cultivation, because a few acres given up to it in each department would furnish sufficient for the consumption of all France?" Then, in his

[1] Extracts from the translation of Bastiat's Sophisms of the Protectionists, edited by Horace White and published by Messrs. G. P. Putnam's Sons [New York and London].

opinion, good consists in sterility and scarcity, evil in fertility and abundance.

La Presse, *Le Commerce*, and the majority of our journals are every day publishing articles whose aim is to prove to the chambers and to the government that a wise policy should seek to raise prices by tariffs; and do we not daily see these powers obeying these injunctions of the press? Now tariffs can only raise prices by diminishing the quantity of goods offered for sale. Then here we see newspapers, the legislature, the ministry, all guided by the scarcity theory, and I was correct in my statement that this theory is by far the most popular.

A man becomes rich in proportion to the profitableness of his labor; that is to say, *in proportion as he sells his productions at a high price.* The price of his productions is high in proportion to their scarcity. It is plain then that, as far as regards him at least, scarcity enriches him. Applying successively this mode of reasoning to each class of laborers individually, the *scarcity theory* is deduced from it. To put this theory into practice, and in order to favor each class of labor, an artificial scarcity is forced in every kind of production by prohibition, restriction, suppression of machinery, and other analogous measures.

In the same manner it is observed that when an article is abundant it brings a small price. The gains of the producer are, of course, less. If this is the case with all produce, all producers are then poor. Abundance then ruins society. And as any strong conviction will always seek to force itself into practice, we see in many countries the laws aiming to prevent abundance.

This sophism, stated in a general form, would produce but a slight impression. But when applied to any particular order of facts, to any particular article of industry, to any one class of labor, it is extremely specious, because it is a syllogism which is not *false*, but *incomplete*. And what is true in a syllogism always necessarily presents itself to the mind, while the *incomplete*, which is a negative quality, an unknown value, is easily forgotten in the calculation.

Man produces in order to consume. He is at once producer and consumer. The argument given above considers him only

under the first point of view. Let us look at him in the second character and the conclusion will be different. We may say:

The consumer is rich in proportion as he *buys* at a low price. He buys at a low price in proportion to the abundance of the article in demand; abundance then enriches him. This reasoning extended to all consumers must lead to the *theory of abundance.*

It is the imperfectly understood notion of exchange of produce which leads to these fallacies. If we consult our individual interest, we perceive immediately that it is double. As *sellers* we are interested in high prices, consequently in scarcity. As *buyers* our advantage is in cheapness, or what is the same thing, abundance. It is impossible then to found a proper system of reasoning upon either the one or the other of these separate interests before determining which of the two coincides and identifies itself with the general and permanent interests of mankind.

If man were a solitary animal, working exclusively for himself, consuming the fruit of his own personal labor,— if, in a word, he did not exchange his produce,— the theory of scarcity could never have introduced itself into the world. It would be too strikingly evident that abundance, whencesoever derived, is advantageous to him, whether this abundance might be the result of his own labor, of ingenious tools, or of powerful machinery; whether due to the fertility of the soil, to the liberality of nature, or to an *inundation* of foreign goods, such as the sea bringing from distant regions might cast upon his shores. Never would the solitary man have dreamed, in order to encourage his own labor, of destroying his instruments for facilitating his work, of neutralizing the fertility of the soil, or of casting back into the sea the produce of its bounty. He would understand that his labor was a *means*, not an *end*, and that it would be absurd to reject the object in order to encourage the means. He would understand that if he has required two hours per day to supply his necessities, anything which spares him an hour of this labor, leaving the result the same, gives him this hour to dispose of as he pleases in adding to his comforts. In a word, he would

understand that every step in the *saving of labor*, is a step in the improvement of his condition. But traffic clouds our vision in the contemplation of this simple truth. In a state of society with the division of labor to which it leads, the production and consumption of an article no longer belong to the same individual. Each now looks upon his labor not as a means, but as an end. The exchange of produce creates with regard to each object two separate interests, that of the producer and that of the consumer; and these two interests are always directly opposed to each other.

It is essential to analyze and study the nature of each. Let us then suppose a producer of whatever kind; what is his immediate interest? It consists in two things: firstly, that the smallest possible number of individuals should devote themselves to the business which he follows; and secondly, that the greatest possible number should seek the articles of his produce. In the more succinct terms of political economy, the supply should be small, the demand large; or yet in other words, limited competition, unlimited consumption.

What on the other side is the immediate interest of the consumer? That the supply should be large, the demand small.

As these two interests are immediately opposed to each other, it follows that if one coincides with the general interest of society the other must be adverse to it.

Which then, if either, should legislation favor as contributing most to the good of the community?

To determine this question, it suffices to inquire in which the secret desires of the majority of men would be accomplished.

Inasmuch as we are producers, it must be confessed that we have each of us antisocial desires. Are we vine growers? It would not distress *us* were the frost to nip all the vines in the world except our own: *this is the scarcity theory.* Are we iron workers? We would desire (whatever might be the public need) that the market should offer no iron but our own; and precisely for the reason that this need, painfully felt and imperfectly supplied, causes us to receive a high price for *our* iron: *again here is the theory of scarcity.* Are we agriculturists?

We say with M. Bugeaud, let bread be dear, that is to say scarce, and our business goes well: *again the theory of scarcity.*

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Are we manufacturers of cotton goods? We desire to sell them at the price most advantageous to *ourselves.* We would willingly consent to the suppression of all rival manufactories. And if we dare not publicly express this desire, or pursue the complete realization of it with some success, we do so, at least to a certain extent, by indirect means; as for example, the exclusion of foreign goods, in order to diminish the *quantity offered*, and to produce thus by forcible means, and for our own profits, a *scarcity* of clothing.

We might thus pass in review every business and every profession, and should always find that the producers, *in their character of producers*, have invariably antisocial interests.

> The shopkeeper [says Montaigne] succeeds in his business through the extravagance of youth; the laborer by the high price of grain; the architect by the decay of houses; officers of justice by lawsuits and quarrels. The standing and occupation even of ministers of religion are drawn from our death and our vices. No physician takes pleasure in the health even of his friends; no soldier in the peace of his country; and so on with all.

If then the secret desires of each producer were realized, the world would rapidly retrograde towards barbarism. The sail would proscribe steam; the oar would proscribe the sail, only in its turn to give way to wagons, the wagon to the mule, and the mule to the foot peddler. Wool would exclude cotton; cotton would exclude wool; and thus on, until the scarcity and want of everything would cause man himself to disappear from the face of the globe.

If we now go on to consider the immediate interest of the *consumer*, we shall find it in perfect harmony with the public interest, and with the well-being of humanity. When the buyer presents himself in the market he desires to find it abundantly furnished. He sees with pleasure propitious seasons for harvesting; wonderful inventions putting within his reach the largest possible quantity of produce; time and labor saved; distances effaced; the spirit of peace and justice diminishing the weight

of taxes; every barrier to improvement cast down; and in all this his interest runs parallel with an enlightened public interest. He may push his secret desires to an absurd and chimerical height, but never can they cease to be humanizing in their tendency. He may desire that food and clothing, house and hearth, instruction and morality, security and peace, strength and health, should come to us without limit and without labor or effort on our part, as the water of the stream, the air which we breathe, and the sunbeams in which we bask, but never could the realization of his most extravagant wishes run counter to the good of society.

It may be said, perhaps, that were these desires granted, the labor of the producer constantly checked would end by being entirely arrested for want of support. But why? Because in this extreme supposition every imaginable need and desire would be completely satisfied. Man, like the All-powerful, would create by the single act of his will. How in such a hypothesis could laborious production be regretted?

Imagine a legislative assembly composed of producers, of whom each member should cause to pass into a law his secret desire as a *producer;* the code which would emanate from such an assembly could be nothing but systematized monopoly; the scarcity theory put into practice.

In the same manner, an assembly in which each member should consult only his immediate interest as *consumer* would aim at the systematizing of free trade; the suppression of every restrictive measure; the destruction of artificial barriers; in a word, would realize the theory of abundance.

It follows then,

That to consult exclusively the immediate interest of the producer is to consult an antisocial interest.

To take exclusively for basis the interest of the consumer, is to take for basis the general interest.

IV. Equalizing of the Facilities of Production

It is said . . . but, for fear of being accused of manufacturing sophisms for the mouths of the protectionists, I will allow one of their most able reasoners to speak for himself.

It is our belief that protection should correspond to, should be the representative of, the difference which exists between the price of an article of home production and a similar article of foreign production. . . . A protecting duty calculated upon such a basis does nothing more than secure free competition ; . . . free competition can only exist where there is an equality in the facilities of production. In a horse race the load which each horse carries is weighed and all advantages equalized ; otherwise there could be no competition. In commerce, if one producer can undersell all others, he ceases to be a competitor and becomes a monopolist. . . . Suppress the protection which represents the difference of price according to each, and foreign productions must immediately inundate and obtain the monopoly of our market.[1]

Every one ought to wish, for his own sake and for that of the community, that the productions of the country should be protected against foreign competition, *whenever the latter may be able to undersell the former*.[2]

This argument is constantly recurring in all writings of the protectionist school. It is my intention to make a careful investigation of its merits, and I must begin by soliciting the attention and the patience of the reader. I will first examine into the inequalities which depend upon natural causes, and afterwards into those which are caused by diversity of taxes.

Here, as elsewhere, we find the theorists who favor protection taking part with the producer. Let us consider the case of the unfortunate consumer, who seems to have entirely escaped their attention. They compare the field of production to the *turf*. But on the turf the race is at once a *means and an end*. The public has no interest in the struggle independent of the struggle itself. When your horses are started in the course with the single object of determining which is the best runner, nothing is more natural than that their burdens should be equalized. But if your object were to send an important and critical piece of intelligence, could you without incongruity place obstacles to the speed of that one whose fleetness would secure the best

[1] M. Le Vicomte de Romanet. [2] Mathieu de Dombasle.

means of attaining your end? And yet this is your course in relation to industry. You forget the end aimed at, which is the well-being of the community.

But since we cannot lead our opponents to look at things from our point of view, let us now take theirs; let us examine the question as producers.

I will seek to prove

1. That equalizing the facilities of production is to attack the foundations of all trade.

2. That it is not true that the labor of one country can be crushed by the competition of more favored climates.

3. That, even were this the case, protective duties cannot equalize the facilities of production.

4. That freedom of trade equalizes these conditions as much as possible; and

5. That the countries which are the least favored by nature are those which profit most by freedom of trade.

1. The equalizing of the facilities of production is not only the shackling of certain articles of commerce, but it is the attacking of the system of mutual exchange in its very foundation principle. For this system is based precisely upon the very diversities, or, if the expression be preferred, upon the inequalities of fertility, climate, temperature, capabilities, which the protectionists seek to render null. If Guyenne sends its wines to Brittany, and Brittany sends corn to Guyenne, it is because these two provinces are, from different circumstances, induced to turn their attention to the production of different articles. Is there any other rule for international exchanges? Again, to bring against such exchanges the very inequalities of condition which excite and explain them, is to attack them in their very cause of being. The protective system, closely followed up, would bring men to live like snails, in a state of complete isolation. In short, there is not one of its sophisms, which, if carried through by vigorous deductions, would not end in destruction and annihilation.

2. It is not true that the unequal facility of production in two similar branches of industry should necessarily cause the destruction of the one which is the least fortunate. On the turf,

if one horse gains the prize, the other loses it; but when two horses work to produce any useful article, each produces in proportion to his strength; and because the stronger is the more useful, it does not follow that the weaker is good for nothing. Wheat is cultivated in every department of France, although there are great differences in the degree of fertility existing among them. If it happens that there be one which does not cultivate it, it is because, even to itself, such cultivation is not useful. Analogy will show us that, under the influence of an unshackled trade, notwithstanding similar differences, wheat would be produced in every kingdom of Europe; and if any one were induced to abandon entirely the cultivation of it, this would only be because it would *be her interest* to employ otherwise her lands, her capital, and her labor. And why does not the fertility of one department paralyze the agriculture of a neighboring and less favored one? Because the phenomena of political economy have a suppleness, an elasticity, and, so to speak, *a self-leveling power*, which seems to escape the attention of the school of protectionists. They accuse us of being theorists, but it is themselves who are theorists to a supreme degree, if being theoretic consists in building up systems upon the experience of a single fact, instead of profiting by the experience of a series of facts. In the above example it is the difference in the value of lands, which compensates for the difference in their fertility. Your field produces three times as much as mine. Yes. But it has cost you three times as much, and therefore I can still compete with you; this is the sole mystery. And observe how the advantage on one point leads to disadvantage on the other. Precisely because your soil is more fruitful, it is more dear. It is not *accidentally* but *necessarily* that the equilibrium is established, or at least inclines to establish itself; and can it be denied that perfect freedom in exchanges is, of all the systems, the one which favors this tendency?

I have cited an agricultural example; I might as easily have taken one from any trade. There are tailors at Quimper, but that does not prevent tailors from being in Paris also, although the latter have to pay a much higher rent, as well as higher prices

for furniture, workmen, and food. But their customers are sufficiently numerous not only to reëstablish the balance, but also to make it lean on their side.

When therefore the question is about equalizing the advantages of labor, it would be well to consider whether the natural freedom of exchanges is not the best umpire.

This self-leveling faculty of political phenomena is so important, and at the same time so well calculated to cause us to admire the providential wisdom which presides over the equalizing government of society, that I must ask permission a little longer to turn to it the attention of the reader.

The protectionists say, Such a nation has the advantage over us, in being able to procure cheaply coal, iron, machinery, capital; it is impossible for us to compete with it.

We must examine the proposition under other aspects. For the present I stop at the question, whether, when an advantage and a disadvantage are placed in juxtaposition, they do not bear in themselves, the former a descending, the latter an ascending power, which must end by placing them in a just equilibrium.

Let us suppose the countries A and B. A has every advantage over B; you thence conclude that labor will be concentrated upon A, while B must be abandoned. A, you say, sells much more than it buys; B buys more than it sells. I might dispute this, but I will meet you upon your own ground.

In the hypothesis, labor, being in great demand in A, soon rises in value; while labor, iron, coal, lands, food, capital, all being little sought after in B, soon fall in price.

Again, A being always selling and B always buying, cash passes from B to A. It is abundant in A, very scarce in B.

But where there is abundance of cash it follows that in all purchases a large proportion of it will be needed. Then in A *real dearness*, which proceeds from a very active demand, is added to *nominal dearness*, the consequence of a superabundance of the precious metals.

Scarcity of money implies that little is necessary for each purchase. Then in B a *nominal cheapness* is combined with *real cheapness*.

Under these circumstances industry will have the strongest possible motives for deserting A to establish itself in B.

Now to return to what would be the true course of things. As the progress of such events is always gradual, industry from its nature being opposed to sudden transits, let us suppose that, without waiting the extreme point, it will have gradually divided itself between A and B, according to the laws of supply and demand; that is to say, according to the laws of justice and usefulness.

I do not advance an empty hypothesis when I say that, were it possible that industry should concentrate itself upon a single point, there must, from its nature, arise spontaneously, and in its midst, an irresistible power of decentralization.

We will quote the words of a manufacturer to the Chamber of Commerce at Manchester (the figures brought into his demonstration are suppressed):

> Formerly we exported goods; this exportation gave way to that of thread for the manufacture of goods; later, instead of thread, we exported machinery for the making of thread; then capital for the construction of machinery; and lastly, workmen and talent, which are the source of capital. All these elements of labor have, one after the other, transferred themselves to other points, where their profits were increased, and where the means of subsistence being less difficult to obtain, life is maintained at a less cost. There are at present to be seen in Prussia, Austria, Saxony, Switzerland, and Italy, immense manufacturing establishments, founded entirely by English capital, worked by English labor, and directed by English talent.

We may here perceive that nature, or rather Providence, with more wisdom and foresight than the narrow rigid system of the protectionists can suppose, does not permit the concentration of labor, the monopoly of advantages, from which they draw their arguments as from an absolute and irremediable fact. It has, by means as simple as they are infallible, provided for dispersion, diffusion, mutual dependence, and simultaneous progress; all of which your restrictive laws paralyze as much as is in their power by their tendency towards the isolation of nations. By this means they render much more decided the differences existing in the conditions of production; they check

the self-leveling power of industry, prevent fusion of interests, and fence in each nation within its own peculiar advantages and disadvantages.

3. To say that by a protective law the conditions of production are equalized, is to disguise an error under false terms. It is not true that an import duty equalizes the conditions of production. These remain after the imposition of the duty just as they were before. The most that the law can do is to equalize the *conditions of sale*. If it should be said that I am playing upon words, I retort the accusation upon my adversaries. It is for them to prove that *production* and *sale* are synonymous terms, which if they cannot do, I have a right to accuse them, if not of playing upon words, at least of confounding them.

Let me be permitted to exemplify my idea.

Suppose that several Parisian speculators should determine to devote themselves to the production of oranges. They know that the oranges of Portugal can be sold in Paris at ten centimes, while on account of the boxes, hothouses, etc., which are necessary to ward against the severity of our climate, it is impossible to raise them at less than a franc apiece. They accordingly demand a duty of ninety centimes upon Portugal oranges. With the help of this duty, say they, the *conditions of production* will be equalized. The legislative body, yielding as usual to this argument, imposes a duty of ninety centimes upon each foreign orange.

Now I say that the *relative conditions of production* are in no wise changed. The law can take nothing from the heat of the sun in Lisbon, nor from the severity of the frosts in Paris. Oranges continuing to mature themselves *naturally* on the banks of the Tagus, and artificially upon those of the Seine, must continue to require for their production much more labor on the latter than on the former. The law can only equalize the *conditions of sale*. It is evident that while the Portuguese sell their oranges at a franc apiece, the ninety centimes which go to pay the tax are taken from the French consumer. Now look at the whimsicality of the result. Upon each Portuguese orange the country loses nothing; for the ninety centimes which

the consumer pays to satisfy the tax enter into the treasury. There is improper distribution, but no loss. Upon each French orange consumed there will be about ninety centimes lost; for while the buyer very certainly loses them, the seller just as certainly does not gain them, for even according to the hypothesis, he will receive only the price of production. I will leave it to the protectionists to draw their conclusion.

4. I have laid some stress upon this distinction between the conditions of production and those of sale, which perhaps the protectionists may consider as paradoxical, because it leads me on to what they will consider as a still stranger paradox. This is, If you really wish to equalize the facilities of production, leave trade free.

This may surprise the protectionists; but let me entreat them to listen, if it be only through curiosity, to the end of my argument. It shall not be long. I will now take it up where we left off.

If we suppose for the moment that the common and daily profits of each Frenchman amount to one franc, it will indisputably follow that to produce an orange by *direct* labor in France, one day's work, or its equivalent, will be requisite; while to produce the cost of a Portuguese orange, only one tenth of this day's labor is required; which means simply this, that the sun does at Lisbon what labor does at Paris. Now is it not evident that if I can produce an orange, or, what is the same thing, the means of buying it, with one tenth of a day's labor, I am placed exactly in the same position as the Portuguese producer himself, excepting the expense of the transportation? It is then certain that freedom of commerce equalizes the conditions of production direct or indirect, as much as it is possible to equalize them; for it leaves but the one inevitable difference, that of transportation.

I will add that free trade equalizes also the facilities for attaining enjoyments, comforts, and general consumption; the last an object which is, it would seem, quite forgotten, and which is nevertheless all important, since consumption is the main object of all our industrial efforts. Thanks to freedom of trade, we would enjoy here the results of the Portuguese sun,

as well as Portugal itself; and the inhabitants of Havre would have in their reach, as well as those of London, and with the same facilities, the advantages which nature has in a mineralogical point of view conferred upon Newcastle.

5. The protectionists may suppose me in a paradoxical humor, for I go farther still. I say, and I sincerely believe, that if any two countries are placed in unequal circumstances as to advantages of production, *that one of the two which is the least favored by nature will gain most by freedom of commerce.* To prove this I shall be obliged to turn somewhat aside from the form of reasoning which belongs to this work. I will do so, however; first, because the question in discussion turns upon this point; and again, because it will give me the opportunity of exhibiting a law of political economy of the highest importance, and which, well understood, seems to me to be destined to lead back to this science all those sects which, in our days, are seeking in the land of chimeras that social harmony which they have been unable to discover in nature. I speak of the law of consumption, which the majority of political economists may well be reproached with having too much neglected.

Consumption is the *end*, the final cause, of all the phenomena of political economy, and consequently in it is found their final solution.

No effect, whether favorable or unfavorable, can be confined permanently to the producer. The advantages and the disadvantages, which, from his relations to nature and to society, are his, both equally pass gradually from him, with an almost insensible tendency to be absorbed and fused into the community at large: the community considered as consumers. This is an admirable law, alike in its cause and its effects, and he who shall succeed in making it well understood will have a right to say, "I have not, in my passage through the world, forgotten to pay my tribute to society."

Every circumstance which favors the work of production is of course hailed with joy by the producer, for its *immediate effect* is to enable him to render greater services to the community, and to exact from it a greater remuneration. Every

circumstance which injures production must equally be the source of uneasiness to him; for its *immediate effect* is to diminish his services, and consequently his remuneration. This is a fortunate and necessary law of nature. The immediate good or evil of favorable or unfavorable circumstances must fall upon the producer, in order to influence him invincibly to seek the one and to avoid the other.

Again, when a workman succeeds in his labor the *immediate* benefit of this success is received by him. This again is necessary to determine him to devote his attention to it. It is also just; because it is just that an effort crowned with success should bring its own reward.

But these effects, good and bad, although permanent in themselves, are not so as regards the producer. If they had been so, a principle of progressive and consequently infinite *inequality* would have been introduced among men. This good, and this evil, both therefore pass on, to become absorbed in the general destinies of humanity.

How does this come about? I will try to make it understood by some examples.

Let us go back to the thirteenth century. Men who gave themselves up to the business of copying received for this service *a remuneration regulated by the general rate of profits.* Among them is found one who seeks and finds the means of multiplying rapidly copies of the same work. He invents printing. The first effect of this is, that the individual is enriched, while many more are impoverished. At the first view, wonderful as the discovery is, one hesitates in deciding whether it is not more injurious than useful. It seems to have introduced into the world, as I said above, an element of infinite inequality. Gutenberg makes large profits by this invention, and perfects the invention by the profits, until all other copyists are ruined. As for the public, — the consumer, — it gains but little, for Gutenberg takes care to lower the price of books only just so much as is necessary to undersell all rivals.

But the great Mind which put harmony into the movements of celestial bodies could also give it to the internal mechanism

of society. We will see the advantages of this invention escaping from the individual to become forever the common patrimony of mankind.

The process finally becomes known. Gutenberg is no longer alone in his art; others imitate him. Their profits are at first considerable. They are recompensed for being the first who make the effort to imitate the processes of the newly invented art. This again was necessary, in order that they might be induced to the effort, and thus forward the great and final result to which we approach. They gain much; but they gain less than the inventor, for *competition* has commenced its work. The price of books now continually decreases. The gains of the imitators diminish in proportion as the invention becomes older; and in the same proportion imitation becomes less meritorious. Soon the new object of industry attains its normal condition; in other words, the remuneration of printers is no longer an exception to the general rules of remuneration, and, like that of copyists formerly, it is only regulated *by the general rate of profits*. Here then the producer, as such, holds only the old position. The discovery, however, has been made; the saving of time, labor, effort, for a fixed result, for a certain number of volumes, is realized. But in what is this manifested? In the cheap price of books. For the good of whom? For the good of the consumer — of society — of humanity. Printers, having no longer any peculiar merit, receive no longer a peculiar remuneration. As men, as consumers, they no doubt participate in the advantages which the invention confers upon the community; but that is all. As printers, as producers, they are placed upon the ordinary footing of all other producers. Society pays them for their labor, and not for the usefulness of the invention. *That* has become a gratuitous benefit, a common heritage to mankind.

What has been said of printing can be extended to every agent for the advancement of labor; from the nail and the mallet up to the locomotive and the electric telegraph. Society enjoys all, by the abundance of its use, its consumption; and it *enjoys all gratuitously*. For as their effect is to diminish prices, it is evident that just so much of the price as is taken

off by their intervention renders the production in so far *gratuitous*. There only remains the actual labor of man to be paid for; and the remainder, which is the result of the invention, is subtracted; at least after the invention has run through the cycle which I have just described as its destined course. I send for a workman; he brings a saw with him; I pay him two francs for his day's labor, and he saws me twenty-five boards. If the saw had not been invented, he would perhaps not have been able to make one board, and I would have paid him the same for his day's labor. The *usefulness* then of the saw is for me a gratuitous gift of nature, or rather it is a portion of the inheritance which, in common with my brother-men, I have received from the genius of my ancestors. I have two workmen in my field; the one directs the handle of a plow, the other that of a spade. The result of their day's labor is very different, but the price is the same, because the remuneration is proportioned, not to the usefulness of the result, but to the effort, the labor, given to attain it.

I invoke the patience of the reader, and beg him to believe that I have not lost sight of free trade: I entreat him only to remember the conclusion at which I have arrived: *Remuneration is not proportioned to the usefulness of the articles brought by the producer into the market, but to the labor.*[1]

I have so far taken my examples from human inventions, but will now go on to speak of natural advantages.

In every article of production nature and man must concur. But the portion of nature is always gratuitous. Only so much of the usefulness of an article as is the result of human labor becomes the object of mutual exchange, and consequently of remuneration. The remuneration varies much, no doubt, in proportion to the intensity of the labor, of the skill which it requires, of its being apropos to the demand of the day, of the need which exists for it, of the momentary absence of competition, etc. But it is not the less true in principle, that

[1] It is true that labor does not receive a uniform remuneration; because labor is more or less intense, dangerous, skillful, etc. Competition establishes for each category a price current; and it is of this variable price that I speak.

the assistance received from natural laws, which belongs to all, counts for nothing in the price.

We do not pay for the air we breathe, although so useful to us that we could not live two minutes without it. We do not pay for it, because nature furnishes it without the intervention of man's labor. But if we wish to separate one of the gases which compose it, for instance to fill a balloon, we must take some trouble and labor; or if another takes it for us, we must give him an equivalent in something which will have cost us the trouble of production. From which we see that the exchange is between troubles, efforts, labors. It is certainly not for hydrogen gas that I pay, for this is everywhere at my disposal, but for the work that it has been necessary to accomplish in order to disengage it; work which I have been spared, and which I must refund. If I am told that there are other things to pay for, — as expense, materials, apparatus, — I answer that still in these things it is the work that I pay for. The price of the coal employed is only the representation of the labor necessary to dig and transport it.

We do not pay for the light of the sun, because nature alone gives it to us. But we pay for the light of gas, tallow, oil, wax, because here is labor to be remunerated; and remark, that it is so entirely labor and not utility to which remuneration is proportioned, that it may well happen that one of these means of lighting, while it may be much more effective than another, may still cost less. To cause this, it is only necessary that less human labor should be required to furnish it.

When the water carrier comes to supply my house, were I to pay him in proportion to the *absolute utility* of the water, my whole fortune would not be sufficient. But I pay him only for the trouble he has taken. If he requires more, I can get others to furnish it, or finally go and get it myself. The water itself is not the subject of our bargain, but the labor taken to get the water. This point of view is so important, and the consequences that I am going to draw from it so clear, as regards the freedom of international exchanges, that I will still elucidate my idea by a few more examples.

The alimentary substance contained in potatoes does not cost us very dear, because a great deal of it is attainable with little work. We pay more for wheat, because to produce it nature requires more labor from man. It is evident that if nature did for the latter what she does for the former, their prices would tend to the same level. It is impossible that the producer of wheat should permanently gain more than the producer of potatoes. The law of competition cannot allow it.

If by a happy miracle the fertility of all arable lands were to be increased, it would not be the agriculturist, but the consumer, who would profit by this phenomenon; for the result of it would be abundance and cheapness. There would be less labor incorporated into an acre of grain, and the agriculturist would be therefore obliged to exchange it for a less labor incorporated into some other article. If, on the contrary, the fertility of the soil were suddenly to deteriorate, the share of nature in production would be less, that of labor greater, and the result would be higher prices. I am right then in saying that it is in consumption, in mankind, that at length all political phenomena find their solution. As long as we fail to follow their effects to this point, and look only at *immediate* effects, which act but upon individual men or classes of men *as producers*, we know nothing more of political economy than the quack does of medicine, when, instead of following the effects of a prescription in its action upon the whole system, he satisfies himself with knowing how it affects the palate and the throat.

The tropical regions are very favorable to the production of sugar and coffee; that is to say, nature does most of the business and leaves but little for labor to accomplish. But who reaps the advantage of this liberality of nature? Not these regions, for they are forced by competition to receive simply remuneration for their labor. It is mankind that is the gainer; for the result of this liberality is *cheapness*, and cheapness belongs to the world.

Here in the temperate zone we find coal and iron ore on the surface of the soil; we have but to stoop and take them. At first, I grant, the immediate inhabitants profit by this fortunate

circumstance. But soon comes competition, and the price of coal and iron falls, until this gift of nature becomes gratuitous to all, and human labor is only paid according to the general rate of profits.

Thus natural advantages, like improvements in the process of production, are, or have a constant tendency to become, under the law of competition, the common and *gratuitous* patrimony of consumers, of society, of mankind. Countries therefore which do not enjoy these advantages, must gain by commerce with those which do; because the exchanges of commerce are between *labor* and *labor;* subtraction being made of all the natural advantages which are combined with these labors; and it is evidently the most favored countries which can incorporate into a given labor the largest proportion of these *natural advantages.* Their produce representing less labor receives less recompense; in other words, is *cheaper.* If then all the liberality of nature results in cheapness, it is evidently not the producing but the consuming country which profits by her benefits.

Hence we may see the enormous absurdity of the consuming country which rejects produce precisely because it is cheap. It is as though we should say: "We will have nothing of that which nature gives you. You ask of us an effort equal to two, in order to furnish ourselves with articles only attainable at home by an effort equal to four. You can do it because with you nature does half the work. But we will have nothing to do with it; we will wait till your climate, becoming more inclement, forces you to ask of us a labor equal to four, and then we can treat with you *upon an equal footing.*"

A is a favored country; B is maltreated by nature. Mutual traffic then is advantageous to both, but principally to B, because the exchange is not between *utility* and *utility*, but between *value* and *value.* Now A furnishes a greater *utility in a similar value*, because the *utility* of any article includes at once what nature and what labor have done; whereas the *value* of it corresponds only to the portion accomplished by labor. B then makes an entirely advantageous bargain; for by

simply paying the producer from A for his labor, it receives in return not only the results of that labor, but in addition there is thrown in whatever may have accrued from the superior bounty of nature.

We will lay down the general rule.

Traffic is an exchange of *values;* and as value is reduced by competition to the simple representation of labor, traffic is the exchange of equal labors. Whatever nature has done towards the production of the articles exchanged, is given on both sides *gratuitously;* from whence it necessarily follows, that the most advantageous commerce is transacted with those countries which are the most favored by nature.

VII. Petition from the Manufacturers of Candles, Wax Lights, Lamps, Chandeliers, Reflectors, Snuffers, Extinguishers; and from the Producers of Tallow, Oil, Resin, Alcohol, and generally of Everything used for Lights

To the Honorable the Members of the Chamber of Deputies:

GENTLEMEN, — You are in the right way: you reject abstract theories; abundance, cheapness, concerns you little. You are entirely occupied with the interest of the producer, whom you are anxious to free from foreign competition. In a word, you wish to secure the *national market* to *national labor.*

We come now to offer you an admirable opportunity for the application of your — what shall we say? your theory? no, nothing is more deceiving than theory; — your doctrine? your system? your principle? But you do not like doctrines; you hold systems in horror; and, as for principles, you declare that there are no such things in political economy. We will say, then, your practice; your practice without theory, and without principle.

We are subjected to the intolerable competition of a foreign rival, who enjoys, it would seem, such superior facilities for the production of light, that he is enabled to *inundate* our *national market* at so exceedingly reduced a price, that, the moment he makes his appearance, he draws off all custom for us; and thus an important branch of French industry, with all its innumerable ramifications, is suddenly reduced to a state of complete stagnation. This rival, who is no other than the sun, carries on so bitter a war against us, that we have every reason to believe that he has been excited to this course by our perfidious neighbor England. (Good diplomacy this, for the present time!) In this belief we are confirmed by the

fact that in all his transactions with that proud island, he is much more moderate and careful than with us.

Our petition is, that it would please your honorable body to pass a law whereby shall be directed the shutting up of all windows, dormers, skylights, shutters, curtains, *vasistas*, *œil-de-bœufs*, in a word, all openings, holes, chinks, and fissures through which the light of the sun is used to penetrate into our dwellings, to the prejudice of the profitable manufactures which we flatter ourselves we have been enabled to bestow upon the country; which country cannot, therefore, without ingratitude, leave us now to struggle unprotected through so unequal a contest.

We pray your honorable body not to mistake our petition for a satire, nor to repulse us without at least hearing the reasons which we have to advance in its favor.

And first, if, by shutting out as much as possible all access to natural light, you thus create the necessity for artificial light, is there in France an industrial pursuit which will not, through some connection with this important object, be benefited by it?

If more tallow be consumed, there will arise a necessity for an increase of cattle and sheep. Thus artificial meadows must be in greater demand; and meat, wool, leather, and, above all, manure, this basis of agricultural riches, must become more abundant.

If more oil be consumed, it will cause an increase in the cultivation of the olive tree. This plant, luxuriant and exhausting to the soil, will come in good time to profit by the increased fertility which the raising of cattle will have communicated to our fields.

Our heaths will become covered with resinous trees. Numerous swarms of bees will gather upon our mountains the perfumed treasures which are now cast upon the winds, useless as the blossoms from which they emanate. There is, in short, no branch of agriculture which would not be greatly developed by the granting of our petition.

Navigation would equally profit. Thousands of vessels would soon be employed in the whale fisheries, and thence would arise a navy capable of sustaining the honor of France, and of responding to the patriotic sentiments of the undersigned petitioners, candle merchants, etc.

But what words can express the magnificence which Paris will then exhibit! Cast an eye upon the future and behold the gildings, the bronzes, the magnificent crystal chandeliers, lamps, reflectors, and candelabra, which will glitter in the spacious stores, compared with which the splendor of the present day will appear trifling and insignificant.

There is none, not even the poor manufacturer of resin in the midst of his pine forest, nor the miserable miner in his dark dwelling, but who would enjoy an increase of salary and of comforts.

Gentlemen, if you will be pleased to reflect, you cannot fail to be convinced that there is perhaps not one Frenchman, from the opulent

stockholder of Anzin down to the poorest vender of matches, who is not interested in the success of our petition.

We foresee your objections, gentlemen; but there is not one that you can oppose to us which you will not be obliged to gather from the works of the partisans of free trade. We dare challenge you to pronounce one word against our petition, which is not equally opposed to your own practice and the principle which guides your policy.

Do you tell us, that if we gain by this protection, France will not gain, because the consumer must pay the price of it?

We answer you:

You have no longer any right to cite the interest of the consumer. For whenever this has been found to compete with that of the producer, you have invariably sacrificed the first. You have done this to *encourage labor*, to *increase the demand for labor*. The same reason should now induce you to act in the same manner.

You have yourselves already answered the objection. When you were told, The consumer is interested in the free introduction of iron, coal, corn, wheat, cloths, etc., your answer was, Yes, but the producer is interested in their exclusion. Thus, also, if the consumer is interested in the admission of light, we, the producers, pray for its interdiction.

You have also said, the producer and the consumer are one. If the manufacturer gains by protection, he will cause the agriculturist to gain also; if agriculture prospers, it opens a market for manufactured goods. Thus we, if you confer upon us the monopoly of furnishing light during the day, will as a first consequence buy large quantities of tallow, coals, oil, resin, wax, alcohol, silver, iron, bronze, crystal, for the supply of our business; and then we and our numerous contractors having become rich, our consumption will be great, and will become a means of contributing to the comfort and competency of the workers in every branch of national labor.

Will you say that the light of the sun is a gratuitous gift, and that to repulse gratuitous gifts is to repulse riches under pretense of encouraging the means of obtaining them?

Take care, — you carry the death blow to your own policy. Remember that hitherto you have always repulsed foreign produce *because* it was an approach to a gratuitous gift, and *the more in proportion* as this approach was more close. You have, in obeying the wishes of other monopolists, acted only from a *half-motive;* to grant our petition there is a much *fuller inducement*. To repulse us, precisely for the reason that our case is a more complete one than any which have preceded it, would be to lay down the following equation: $+ \times + = -$; in other words, it would be to accumulate absurdity upon absurdity.

Labor and nature concur in different proportions, according to country and climate, in every article of production. The portion of nature is always gratuitous; that of labor alone regulates the price.

If a Lisbon orange can be sold at half the price of a Parisian one, it is because a natural and gratuitous heat does for the one what the other only obtains from an artificial and consequently expensive one.

When, therefore, we purchase a Portuguese orange, we may say that we obtain it half gratuitously and half by the right of labor ; in other words, at *half price* compared with those of Paris.

Now it is precisely on account of this *demi-gratuity* (excuse the word) that you argue in favor of exclusion. How, you say, could national labor sustain the competition of foreign labor, when the first has everything to do, and the last is rid of half the trouble, the sun taking the rest of the business upon himself ? If then the *demi-gratuity* can determine you to check competition, on what principle can the *entire gratuity* be alleged as a reason for admitting it ? You are no logicians if, refusing the demi-gratuity as hurtful to human labor, you do not *a fortiori*, and with double zeal, reject the full gratuity.

Again, when any article, as coal, iron, cheese, or cloth, comes to us from foreign countries with less labor than if we produced it ourselves, the difference in price is a *gratuitous gift* conferred upon us ; and the gift is more or less considerable, according as the difference is greater or less. It is the quarter, the half, or the three quarters of the value of the produce, in proportion as the foreign merchant requires the three quarters, the half, or the quarter of the price. It is as complete as possible when the producer offers, as the sun does with light, the whole in free gift. The question is, and we put it formally, whether you wish for France the benefit of gratuitous consumption, or the supposed advantages of laborious production. Choose, but be consistent. And does it not argue the greatest inconsistency to check as you do the importation of coal, iron, cheese, and goods of foreign manufacture, merely because and even in proportion as their price approaches *zero*, while at the same time you freely admit, and without limitation, the light of the sun, whose price is during the whole day at *zero?*

CHAPTER XVIII

THE DISTRIBUTION OF WEALTH

1. Present Work and Present Wages[1]

The work of to-day and the output of to-day go together. Taking a survey of the varied activity of a great civilized community, let us see what the laborers now do and what they now produce. Evidently the most diverse things. Some laborers are at work in mines digging out ore and coal. Others are at work conveying coal and ore, which had been brought out days or weeks before, to the spot where they are to be used. Others, again, at that spot are engaged in converting materials of still earlier extraction into pig iron. Elsewhere men are at work fashioning tools and machinery from iron and steel; or using the tools or machinery for spinning or weaving; or making up cloth into garments wherewith to protect us from cold and wet, and to satisfy our vanity or caprice. Or, to take another phase of production: at the moment when some laborers are at work digging out ore and coal, and others are transforming ore and coal of earlier extraction into iron, trees are felled at one spot, timber hewn and sawed and fashioned at another; plows are made of wood and iron, fields are tilled, grain is in process of transportation from granary to mill, other grain is ground into flour, flour is carried to the bakery, — bread, finally, is baked and sold.

We naturally picture the various sorts of productive effort, as they have just been sketched, as taking place in succession: the ore is first dug, the plows then made, the field next tilled, the bread comes at the end. In fact, looking at the work and the output of to-day, these operations are all taking place

[1] By F. W. Taussig. Reprinted, by consent, from Taussig's Wages and Capital. Copyright, 1896, by D. Appleton & Company.

simultaneously. If we follow the history of a loaf of bread or a suit of clothes, we find them to be the outcome of a succession of efforts, stretching back a considerable time in the past. But if we take a section, so to speak, of what the world is now doing and now getting, we find that at any one moment all these various sorts of work are being done together, and all the various forms of wealth, from ore to bread, are being made simultaneously.

It was suggested long ago that production can be best described as the creation of utilities. Human effort cannot add or subtract an atom of the matter of the universe. It can only shift and move matter so as to make it serve man's wants, — make it useful, or create utilities in it. Matter reaches the stage of complete utility when it is directly available for satisfying our wants; when it is bread that we can eat, clothes that we can wear, houses from which we can secure shelter and enjoyment. The object of all production is to bring matter to this stage; or, to be more accurate, to yield utilities, whether embodied in matter or not, which give immediate satisfaction. But a great part of our wealth — indeed much the greater part of it — consists of things which are but partly advanced toward the final satisfaction of our wants. Consider the enormous quantities of commodities which are bought and sold, and which constitute huge items in the wealth of the community, in the form of plant and materials: coal and iron and steel, wool and cotton and grain, factories and warehouses, railways and ships, and all the infinite apparatus of production that exists in the civilized countries of our day. All this is inchoate wealth. It serves as yet not to satisfy a single human want. It is not good to eat, nor pleasant to wear, nor agreeable to look on, nor in any way a direct source of enjoyment; unless, indeed, we make exceptions of the kind that prove the rule, for the cases where ships and railways are used for pleasure journeys, cotton soothes a burn, and grain yields the pleasure of feeding a household pet. Virtually all the utilities embodied in such commodities are inchoate. These things, or others made by their aid, will in the future bring enjoyment; but for the

present they satisfy no need and yield no pleasure. We are so habituated to the régime of exchange and sale, and to the continuous disposal of these forms of wealth by their owners for cash wherewith anything and everything can be bought, that we think of them ordinarily in terms of money value, and reckon them as equivalent to the possession of so much completed and enjoyable wealth. But, obviously, for the community as a whole, there is on hand at any given time a great mass of inchoate wealth which as yet can satisfy no want. And at any given time a great part of the labor of the community is devoted to making inchoate wealth, of which no part is directly of use or pleasure to any human being.

On the other hand, part of the labor of to-day is given to the close and immediate satisfaction of our wants. The baker bakes bread, the tailor makes clothes. The shopkeeper sells us things necessary or convenient or agreeable, and so brings them to the point where they finally meet our desires. The servant waits on our needs or contributes to our ease. In a multitude of directions it is the housewife through whom the last stage toward satisfaction is reached. Her labors have been celebrated less by economists than by poets; yet they play a very large part in that final activity through which a long series of past efforts is at last brought to fruition.

Compare now for a moment these two things: on the one hand, that part of the work of to-day which is given to inchoate wealth or uncompleted utilities; on the other hand, that part which serves directly to give satisfaction. Clearly the former is much the larger in volume. It must be remembered that commodities serve to give real satisfaction only when they reach the hands of those who use and enjoy them. That iron and stone, factories and furnaces, raw wool and cotton, grain in the bin, are not available for use or consumption, is obvious enough. It is equally certain, though not so obvious, that flour and cloths and boots are no more available when simply carried to the stage of completion in the mill or factory. To reach the consumer they must first pass through the hands of one or two carriers and two or three sets of middlemen, whose labors form

part of the operation of production quite as much as those of the tillers of the soil and the workers in the factories. It is hardly worth while to lay down any hard-and-fast line in matters of this sort, or to try to define with precision where the very last step comes which brings completion of the products, and so satisfaction to the body of consumers. Ordinarily this stage would not be reached until the goods had been disposed of to purchasers by the retail dealer. While in the shopkeeper's hands, arranged by him and cared for by him, kept and stored in supply large enough and varied enough to meet regular and irregular demands, they are still to be considered as possessing only inchoate utility. Under the conditions of a complicated division of labor, those workers whom in common speech we call producers, as distinguished from the merchants and traders, advance matters a step nearer the end, but usually bring nothing to fruition. The small producer who deals directly with the consumer has not indeed disappeared; but in the communities of advanced civilization the consumer satisfies most of his wants by going to a shop where he finds commodities that have left the factory weeks or months before. The stores of goods that are accumulated in the warehouses of merchants, both of the large dealers and the petty tradesmen, are still on their way to completion, and still form part of the great mass of inchoate wealth. And, to repeat, this mass of inchoate wealth, in any moment, forms much the largest part of the possessions of the community.

It follows that most of the work which is being done at a given moment is work of no immediate service to any one. A few laborers are engaged in putting the finishing touches to commodities on which a complicated series of other laborers have been at work for years, or even decades, in the past. These few alone work to supply our immediate wants. The great mass of workers are engaged in producing tools, materials, railways, factories, goods finished but not yet in the place where the consumer can procure them — inchoate wealth of all sorts.

All this is part of the division of labor; it is, in fact, the most important form of the division of labor. While a few men

put the finishing touches, the great mass are busy with preparatory work which is parceled out among them in an infinity of trades and occupations. It is conceivable that some such apportionment of labor might have developed without a corresponding division of the different stages among different individuals. The same man might first mine the ore, then smelt it, then fashion his tool, then use it, and finally make his own clothing or secure his own food. But historically, the process by which so preponderant a part of the labor going on at any one moment has been devoted to preparatory work or inchoate wealth has been accompanied by a corresponding growth and diversification of the division of labor. It may serve to make our subject clearer if we consider it for a moment in this aspect.

The division of labor may be classified, for the present purpose, as of two sorts, — contemporaneous and successive. We may designate as contemporaneous that division by which one man does all the work of getting the food, another all that of making the clothes, a third all that of providing shelter, and so on; each carrying out all the steps, from beginning to end, involved in the production of his particular commodity. Under such an arrangement each worker would become expert in his trade and would work at it uninterruptedly. It is conceivable that in a primitive community, where all work was devoted to securing a finished commodity at short order, and few steps intervened between the beginning and the end of production, the productiveness of labor might be considerably increased by such a division of it. But vastly more important in the history of the arts and of civilization is that division which involves a separation of successive related acts, — the division in which various steps in production are carried on one after another by different hands, and through which each commodity becomes the product of the complex and combined labors of a great number of men. A set of porters, making a profession of carrying packs, develop their muscles and wind to an extraordinary degree, and become capable of carrying those heavy burdens which astonish the traveler in backward countries. Yet their achievements are as nothing compared with those of the successive

divisions of labor. When one set of men attend to the making of roads, another to the rearing of horses, another to the procuring of iron and timber, others to wheels, wagons, harness, — we get in the end, through transportation by wheeled vehicles, an enormous diminution in the labor required for a given result. The contrast is still more striking if we consider the successive division of labor in the last form to which the art of transportation has been carried in the present century. The operations extending over a series of years for cuttings, embankments, tunnels, bridges, not to mention the tools for these, which engaged the energies of a still earlier series of workers; the making of iron and steel, of engines and cars, of the endless variety of railway apparatus, — all finally bring that extraordinary cheapening of transportation which has so completely revolutionized the industry of modern times. To find out how much labor has been given under these methods to any one wagon load or any one car load, we should need to consider, in due measure, all the successive steps. We should need to assign some slight fraction of the labor given to the making of the wagon road or roadbed of the railway; a fraction, less small, of the labor for making the wagons, or the cars and engines; the whole of the labor of those, like the drivers of the horses or the trainmen of the railway, who are engaged immediately in transportation. To carry out directly a calculation of the labor involved in the carriage of a single ton or wagon load would be impossible; but an infallible test — the price at which the service can be rendered — shows how enormously more effective is the more extended and complicated mode of doing the work.

It would be difficult to find an historical example of the bare and uncomplicated use of the contemporaneous division of labor. The earliest form doubtless was more or less of the successive sort, and the two have developed hand in hand with the progress of the arts. The contrast between the primitive porter and the railway is obviously a contrast not between the contemporaneous and the successive division of labor, but between two phases of the successive division. The transporting of goods means only that materials are carried to those who are to

manipulate them, or tools to those who are to use them, or enjoyable goods to those who are to consume them or sell them to consumers. It means but one step — sometimes an early step, sometimes a late one — in the successive division of labor. But it illustrates the contrast between shorter and longer ways of attaining a given end, and the mode in which the progress of invention has caused a long stretch of time to elapse between the first step and the last toward the satisfaction of human wants.

So overpoweringly great have been the results of the successive division of labor, that it is natural to think of its extension as a cause, or at least as a necessary incident, in the increase of the powers of mankind and the abundance of enjoyable goods. In a great number of striking cases we see the progress of the arts taking a direction similar to that which has just been sketched as to the art of transportation. The spinning wheel and the hand loom, easily and simply made, have given way to the jenny and the mule and the power loom, fixed in a great building, and moved by complicated machinery; all involving a longer stage of preparatory effort, and yielding the enjoyable commodity in the end on easier terms. Savages grind corn by rubbing it between two heavy stones which nature happens to have provided in something like the needed shape. The grist mill, with its hewn stones and its simple machinery, serving its own limited neighborhood, represents a considerable extension in time of the productive process, and a great increase in its efficiency. The modern steam mill, with its huge plant, its warehouses and machinery, with the enormous apparatus of railways and steamers for bringing the grain from the four quarters of the globe and transporting the flour to distant consumers, carries both consequences still further. Hence it has been laid down as a general proposition, by one of the ablest and most ingenious writers of our own day, that every increase in the efficiency of labor brings with it an extension in time of the process of production.[1] But it may be questioned whether anything like a

[1] Professor Böhm-Bawerk's brilliant analysis, in the opening chapters of the Positive Theory of Capital, has done more than any other single discussion to emphasize the significance of the lengthened period of production. It is due to

connection of cause and effect can be traced or anything more than a fact of usual experience found. In the past those inventions and discoveries which have most served to put the powers of nature at human disposal have indeed often taken the form of greater and more elaborate preparatory effort. The railway, the steamship, the textile mill, the steel works, the gas works, and electric plant,— in all these, invention has followed the same general direction. But that it will do so in the future, or has always done so in the past, can by no means be laid down as an unfailing rule. The railway, the telegraph, and the telephone have served to shorten many steps in production; and elaborate machines, though it takes time to make them, do their work, once made, more quickly than simpler tools. Invention in the future may dispense with steps now thought indispensable; or it may enable elaborate plants to be dispensed with, as would be the case if the success of flying machines made the costly roadbed of the railway unnecessary. It would be rash to say that productive process, under the successive division of labor, is likely to be either lenghtened or shortened; for the ferment in the world of invention, and the glimpses of new processes in almost every direction make either outcome possible. But it is in the highest degree improbable that any changes the future may bring will affect that feature of the industrial situation which is important for the subject here under discussion. Under any methods of production, considerable quantities of materials will be provided in advance, tools will be made with much labor, and consumable commodities will be brought to completion at the end of long stages of productive effort.

The beginning and the end of the process of production have been just spoken of; but clearly these are limits more easily described in general terms than fixed with precision in a particular case. The end of the process of production is indeed not

this able thinker to note that he describes in these chapters the connection between the extension of production over time and its increasing efficiency as a simple fact of experience, not as part of the nature of things; but in the corollaries drawn from the proposition in his later reasoning it is treated as if universally true. Compare, however, what he has said in reply to some American critics, in the *Quarterly Journal of Economics*, for January, 1896.

difficult to fix. It comes when enjoyment begins, when the consumer gets the wherewithal to feed, to clothe, to shelter himself, to minister to his satisfaction or pleasure in any way. Ordinarily this stage comes, as to tangible goods, when they pass from the shelf of the retail dealer into the hands of the purchaser. But it is by no means easy to put the finger on the point where the process of production has its beginning. Bread is made from flour, and flour from grain; the sowing of the seed is our starting point in the process of production; but the seed was grown a season before, and comes from an earlier stage of effort. The plow, too, was provided before the seed was sown, and that plow was made with tools which came from still an earlier application of labor. The mill in which the grain was ground into flour was erected years before, and the railway which carried the grain to the mill stands for another previous application of labor. Where shall we say that the process of production begins? If we would be mathematically accurate, we should need to carry it ages back, to the time when the first tool was made; for tools are made with tools, and each is in some infinitesimal part the result of labor applied to its predecessor of a thousand years ago. For practical purposes, to be sure, we can in large part dismiss this consideration. The labor given fifty years ago to smelting iron that was made into tools, which again served to make other tools, is so infinitesimal a part of the labor involved in producing the consumable commodities of the present, that we may say, *De minimis non curat lex.* But the complications of the labor of the present and of the immediate past are no less puzzling. The carpenter works one day at the frame of a steel mill, which will turn out steel beams to be used in buildings or ships; years may elapse before the first completed commodity emerges. The next day he makes a piece of furniture, — or, rather, does his share in the making of it, — which conduces to the comfort of a householder within a week. The railway carries ore which represents a very early stage in the process of production; it carries wool, which may be made into a coat and may warm its wearer within three months; and passengers who at the moment are enjoying a pleasure jaunt.

To measure exactly where the labor which builds and operates a railway stands in the process of production is practically impossible.

Hence it is practically impossible to measure how long the average process of production is, — to say how long an interval has elapsed between the time when all the consumable commodities now available were begun and the time when they were completed. We can, indeed, conceive of the meaning of such an average. We can say that the labor of the domestic servant issues in enjoyment very quickly; that of the operative in a woolen mill, after a few weeks or months; that of the farmer, after a year; that of the ship carpenter or steel worker, after years or even decades. If we could take the balance of short processes and long processes, we should ascertain how long, on the average, it had taken to make our present enjoyable possessions. We can even do more than picture to ourselves this possible grouping and offsetting of the various processes. We can say, from general observation, that the tendency of invention has been to lengthen the average. The process of production, as a whole, has probably tended to become longer; and if invention follows the same lines in the future as in the past, the process, on the average, will become still longer. But it is impossible to say how long it now is, whether two years, or five, or ten. The complications of the case make any statement in figures out of the question. When we consider the immediate history of the most common sources of satisfaction, — food, clothes, shelter, and reflect how long a time has elapsed, even after the needed tools were on hand, since the grain and cotton were sown, the sheep raised for the wool, and the cattle for the leather, the bricks made, the trees felled, — we may be sure that the average period of production must be stated in terms of years. And this vague conclusion, unsatisfactory as it would be for statistical purposes, is sufficient for the purpose now in hand. It is clear that production is spread over a period of years; and it is clear that the greater part of present labor is given to production at stages preceding by a longer or shorter interval the attainment of the enjoyable result.

Before leaving this subject one further circumstance may be noted in regard to the length of time over which, under the modern division of labor, the operations of production extend. One part of the period, the last of all, is perhaps susceptible of measurement. To repeat what has already been said, the work of the merchant and trader is as fully productive as that of the artisan and carrier. Each does his share towards bringing commodities to the stage where enjoyment finally begins. It would doubtless be possible to ascertain how long the last stage endures; to find how long a period elapses, on the average, between the moment when goods pass from the hands of the manufacturer and artisan into the hands of the dealer, and that at which they pass from the last dealer into the hands of the consumer. The great mass of commodities pass through the hands of two or three middlemen; they go first to the wholesale dealer or agent, then to the jobber, finally to the retailer. Each of these keeps them a space. Barring perishable commodities, like meats and vegetables, a turnover of more than six or eight times in the year is unusual; as to many articles, one of three or four times a year is common. The inference is plain. Months elapse, on the average, between the time when goods are finished, in the everyday sense of the word, and the time when they reach that stage of enjoyment which is the real aim and end of all effort.

So much as to the first part of the inquiry undertaken in the present chapter,—the relation between the work of to-day and the output of to-day; an inquiry which has proved to involve some consideration of the work of yesterday as well. Whether as to the work now being done, or the work which yields the consumable goods now available, we have the same result. The work of to-day is applied preponderantly to inchoate wealth, to preparatory stages in production; and the output of to-day consists mainly of goods not yet in enjoyable form. Most of the labor being done at the present moment will bring consumable goods at some time in the future; while the consumable goods now available are mainly the product of past labor. The whole process of production is extended over a

period not, indeed, to be measured with accuracy, yet certainly to be stated in terms of years.

We may turn now to the second part of the inquiry: What is the pay of to-day?

The answer here is simple, and could be given in the briefest terms. The immediate reward for the exertion of labor consists of completed and enjoyable commodities. Food, clothing, shelter, things that satisfy our needs and our desires,— these are the pay of to-day. The laborer's bread and meat, his tobacco and his whisky, his house and his clothes, things that may do him good or harm, but are at all events desired by him, constitute the reward he now gets.

This is so simple that it would seem not to need another word of explanation. Yet on the subject of wages, as on many others in economics, it is the failure to bear in mind very simple and obvious facts that most frequently causes error. In discussions of wages, of the source whence they are paid and the factors that affect their amount, nothing has been more common than to consider only the machinery by which laborers are enabled to get their real wages. The cash paid them by an employer, or received by them in direct pay for their product, has been mainly thought of. The obvious distinction between real wages and money wages makes its appearance in every book on the elements of economics, but it is too often forgotten when the causes determining wages come to be examined. When a question arises as to the relation between the laborer's output and his pay, it is common to speak of his product and of his pay in terms of money. When it is asked whether the laborer is paid out of capital or out of product, the first impulse is to think of capital as money funds in the hands of the employer and of product as the money value of what is being turned out. In answer to the proposition, attributed more or less justly to the older English economists, that laborers get their wages from a rigidly predetermined source, it is often said that the wages which employers can pay may be increased by quicker sales or by the use of credit, — which obviously refers to money wages. The inquiry as to the direct relation between laborers and employers, and as to that first step in the

apportionment of wages which comes through money payments from one to the other, is important and fruitful, as will elsewhere appear. But on the crucial question of the cause of general high wages in the sense of general real prosperity among laborers, it leads only to confusion. If we would learn what makes wages high, in the sense which is mainly important for the workmen as a class and for the community as a whole, we must bear in mind that real wages alone are to be thought of, — things consumable and enjoyable.

What is true of the laborers is true of all classes in the community. All, whether idlers or workers, get their real reward from the same source, — the completed commodities which satisfy human wants. These, as they appear in recurrent supply, form the net income of the community. Whether there can be any possibility of separation of this net income into parts destined for any one set of persons, or appropriated to them, — whether one part of the available supply can be said to constitute a wages fund, another a profit fund, a third an interest fund, a fourth a rent fund, — these are questions that will engage our attention at a later stage. Here we may content ourselves with the simple and unquestionable proposition, that all real income of any sort comes in the form not of money, but of goods and wares that minister to our wants.

Still further to emphasize this elementary yet all-important proposition, we may consider for a moment where we should find in any given community this immediate reward of the laborer. It must proceed chiefly from the stocks in the hands of the retail dealers. Their wares are in the last stage which production goes through, and are on the point of ripening into full completion. A good part of wages, no doubt, must come from elsewhere. House shelter, partly a necessity and partly a source of comfort and luxury, is ordinarily already on hand, needing no further labor toward complete fruition than occasional repairs. If owned by another person, as is commonly the case with the house occupied by the hired laborer, that person is in possession of the source whence so much of real wages is derived. If the laborer owns his own house, he spends the money received for

present labor in other ways. The shelter and comforts of the house he owns form no part of his real reward for the work of to-day; they are the reward of past labor, or past claims or rights of some sort, and no more form part of his pay for present work than the enjoyments which the idle rich buy with their money incomes form reward for any present exertion. His wages for present exertion are what he buys with the cash which, under a money régime, he receives for the day's or week's work; and questions as to the sources of his real wages, their limits, their flexibility, or predetermination, are questions as to the limits and determinateness of the stocks or forthcoming supplies of goods now chiefly in the hands of shopkeepers, which he will buy with his money wages.

We are now in a position to give an answer to one part of the question with which this chapter opened: whether wages are or are not paid from present or current product. The answer to the other part of the question, — whether or not they are paid from capital, — must still be postponed, requiring, as it does, some further consideration of the definition and function of capital. But wages are certainly not paid from the product of present labor; they are paid from the product of past labor. Present labor produces chiefly unfinished things; but the reward of present labor is finished things. Real wages are virtually to their full extent the product of past labor. At this moment, or within a few days, the last touches toward completion have indeed been given to the commodities now being enjoyed. But the great bulk of the labor whose product all of us, whether laborers or idlers, now enjoy was done in the past.

This fact is obscured, in our everyday thought, in two ways: we think of the product in terms of money, and we think of the laborer who gives the finishing touches in production as the "maker" of the article. When we want to compare the amount which a laborer produces with the amount which he receives, the simplest and most obvious way is to compare the money value of the two: a method the more tempting because for many purposes, not least for the business ends of the individual employer, it is all-sufficient. Thus we think of product and wages as

similar things, and of product as preceding wages; forgetting that in concrete reality they are different things, and that present real wages must be on hand long before present product is completed. On the other hand, the baker is said to make bread, the tailor to make clothes, the carpenter to make furniture; though, with the inconsistency characteristic of that early stage of classification which is crystallized in common speech, we never speak of the merchant or shopkeeper as "making" anything. In fact the baker and the tailor do no more than their small shares in the making of bread and clothes; a long series of farmers and wool growers, manufacturers, merchants, and carriers constitute with them the complete chain of the producers of the articles.

There is a sense, it is true, in which we may speak with accuracy of wages as coming from current product; and it is one which deserves attention, because it brings out the relation between some older speculations on wages and capital and the more recent turn of the discussion.

The classic economists were in the habit of speaking of the commodities consumed by laborers as a fund or stock, described in a way that implied a great store on hand, ready and available at once, likely to be replaced after a season by another similar store. This at least was their practice when they described the wages fund as a concrete thing, made up of commodities which would yield real wages. Too often they spoke and thought of funds and capital in the money sense, and of wages as coming from the employing capitalists' money means, thereby introducing a confusion which runs through almost the whole of the century's literature on the subject. Ricardo, however, and the abler of Ricardo's followers, usually kept to the first conception, of a wages fund made up of commodities, not of money. In the Ricardian system, again, wages were measured in terms of food, and especially of grain or corn; and the wages fund consisted of a stock of food. For shortness of reasoning and of statement (too often with the result of confusion in both) this stock was reasoned about as if it were owned by the immediate employers and handed over by them directly to laborers who ate it. The miller and the baker were put aside; and, what was more

dangerous to accurate thought, it was assumed for brevity that the capitalists who employed the laborers were the individuals who owned the grain. The source of wages was then easily conceived as a fund stored up, all ready for use, controlled by employers, limited in amount for the time being, and entirely the product of past labor. The seasonal harvesting of the crops made it impossible this year to procure more than had been sown and harvested ; and the real wages fund had nothing to do with current work and product.

The error of this view is one of degree rather than of kind, of insufficiency rather than of inaccuracy. It is no grievous departure from literal truth if we speak of grain as consumable by laborers, omitting, for brevity, the operations of transporting, and grinding, and baking it. And we may perhaps fairly think of the grain on hand this season as fixed in amount, incapable of being increased or diminished. Doubtless there are here some elastic limits ; a heavy crop may be carried over in part to another season, and a lean one consumed at once to the last bushel in anticipation of better times soon to come. This sort of averaging of the yield certainly could take place under modern methods of storage and preservation, and may have taken place even in the days when Ricardo wrote. It is more important to correct the older view in other directions. Food is not the only article consumed by laborers ; none of the various commodities that make real wages, not even breadstuffs, exist in the shape of accumulated stores of finished goods. Further, the capitalists who directly employ laborers have usually no ownership of the commodities which make real wages. If these real wages come from capital, the capital is certainly not in the hands of the employers.

Considering both of the last-mentioned facts in the situation, — the variety of the commodities which go to make real wages, and the widely distributed ownership of these tangible commodities, — we reach the conception of a flow rather than a fund of real wages. The community possesses at any given moment a quantity of goods in all stages of completion — some just begun, some half finished, some very nearly or quite finished. The last

touches are being given at every moment ; enjoyable commodities each day are consumed, new commodities advance each day to take their place. We have no great stores of completely finished goods, but, as Professor Marshall has happily said, a steady flow of accruing real income.

No doubt the old conception of a fund fits the facts of the case in some regards quite as accurately as the new one of a flow. The distinguished Austrian writer who has contributed so much to the clearer understanding of this part of the machinery of production, has suggested that all the possessions of the community may be reduced to an equivalent in terms of subsistence or other finished goods. What he calls the general subsistence fund is made up of all wealth whatsoever, — machines, materials, completed goods. Its volume may be measured by ascertaining how much labor is embodied in this sum total of wealth, and how long the wealth, completed and enjoyable, which so much labor could produce, would continue to satisfy the wants of the community at its habitual rate of consumption. In this sense we may say that the community owns at any given time a subsistence fund for, say, five years ; meaning not that there are stores of finished goods which will last five years, but that the wealth on hand has embodied in it five years of the community's labor, and, simply carried to completion without the initiation of a stroke of new work, would last for a long period. Here we have a statement of the case, useful for some purposes, which looks to a fund rather than to a flow. And from still another point of view the conception of a fund has its justification. The stock of available finished commodities, if a flow, is affected in its volume by sources which possess some of the characteristics of a reservoir or fund. The number of loaves that can be put forth from day to day depends on the season's stock of grain ; that of clothes, on the wool and the sheep on hand, and on the machinery available for manipulating the materials ; that of boots, on the hides, and the cattle, and the available machinery. How far the volume of consumable goods now obtainable is limited by such conditions ; how far determined once for all by the materials and tools of past making ; how far capable of enlargement or diminution

by changes in the labor of the moment, — these are questions which may engage our attention at a later stage. For the present it is necessary only to get a clear conception of the sense in which there is on hand at any given time a supply or stock of finished goods for the consumption of laborers and others. It is a flow of finished goods from goods partly finished, constantly wasting away and constantly renewed ; greatly affected, perhaps determined once for all, by the mode in which past labor has been given to tools and materials ; yet certainly not without some degree of flexibility at any given moment, and certainly not an accumulated or rigid fund.

We can see now in what sense it is true that wages — or any other form of income, for that matter — are paid out of current product. The goods which laborers get, or, to be literally accurate, the goods which they buy with their money wages, in a sense are made from day to day ; they are current product in the sense that the last touches are given them from day to day. Something of this sort has doubtless been in the minds of the writers who have maintained that wages are derived from present or current product. Unquestionably a confusion between real wages and money wages has also had its share in the adoption of their view. Current money wages obviously do come largely from the money value of the present product, and the proposition that wages are paid from the current yield of industry in this sense is as undeniable as it is immaterial so far as the source of real wages is concerned.

We may now summarize the results of this chapter by a graphic representation of the course of production and enjoyment in a modern community. A diagram showing the relation between the work of to-day, the output of to-day, and the pay of to-day may be constructed thus: let A represent the workers who stand in the earliest stage of production, say the miners and lumbermen ; let B represent those in the next stage, say the makers of pig iron and of sawed timber; let C designate those who carry on operations in the next stage toward completion ; D, those in the next; and E, finally, those who give the finishing touches and bring to market a consumable

commodity. The same letters may indicate the products turned out by the different producers, A standing for the iron ore, and E for the bread and meat. A, B, C, D, E may represent the workers and their output in a first year; A_1, B_1, C_1, in a second year; and so on. We could then array the operations of a series of years in this fashion:

In 1890	A	B	C	D	E
" 1891	A_1	B_1	C_1	D_1	E_1
" 1892	A_2	B_2	C_2	D_2	E_2
" 1893	A_3	B_3	C_3	D_3	E_3
" 1894	A_4	B_4	C_4	D_4	E_4

In each year all the various operations are going on simultaneously. A, B, C, D, E are at work on their separate tasks, and are turning out all shades of products, from the crudest material to the ripened commodity. In successive years the A's and the E's continue alike to repeat their work: the miners remain in the mine, the shopkeepers serve their customers in the shops. In any one year the community, while producing all the products A, B, C, D, E, has at its disposal only the commodities E. These alone are consumable and enjoyable; these alone can constitute real wages or real profits or real income of any sort. In the year 1890 E would be available; in 1892, E_2. The question whether wages in 1894, which must come out of E_4, are the product from past or present labor, can be answered by inquiring what labor produces the E commodities of any one year; say E_4 of 1894. If we suppose present labor, then E_4 will be the product of the work indicated by the horizontal line A_4, B_4, C_4, D_4, E_4. If past labor, or chiefly past labor, then E_4 will be the product of the work indicated by the diagonal line A, B_1, C_2, D_3, E_4. It needs no argument to show that the workers E_4 cannot be completing the material which A_4 are bringing forth at the same time. Each stage in the

successive division of labor requires time. E_4 must be at work on products which came from D of an earlier period, say the D_3 of 1893; D_3 got them, partly advanced toward completion, from C_2 of 1892; the first steps were taken five years ago by A of 1890. The diagonal line marks the labor which yields the enjoyable commodities of 1895, — labor mainly of the past, and only in small part of the present.

It hardly needs to be explained again that a simple scheme of this sort is far from corresponding to the complexities of real life. The earliest and the latest stages of production are so interwoven that any brief statement or simple diagram can give no more than a crude and inaccurate picture. The commodities which we have typified in the E's, and which are represented as lately finished, after having gone through a regular series of previous operations, are sometimes made very largely with recent labor, sometimes very largely with past labor. Personal or domestic service is an important source of enjoyment; as productive of satisfaction, and therefore of wealth in the important sense, as the labor that makes bread and wine. Here exertion and satisfaction are coincident; there is no chain of successive producers. On the other hand, the shelter and comfort which are now yielded by a dwelling are in greatly preponderant proportion due to labor exerted in varying stages of progression in the past. And at the other end of the scale commodities in the early stages of unripeness may reach fruition by a longer or shorter route. Pig iron may be made into a stove and may serve to diffuse grateful warmth within a month; or it may be made into a machine which will be used in making another machine, and may not issue in a consumable commodity for years. Any scheme, or diagram, or classification of the stages in production must have a rigid and arbitrary character, and cannot conform to the endless complexities of the living industrial world. None the less it may bring into distinct relief the general truth which underlies all the variety of detail, — that production proceeds by successive stages, and that the community at present is supplied with necessaries and comforts made mainly by the labor of the past.

2. Historical Changes in the Rate of Wages[1]

It is not easy to present the facts concerning the movement of wages, and we can here offer only a brief summary of the subject. The forms of payment are so various, comparison is so difficult, the materials for earlier times are in many countries so incomplete, that a comprehensive account of wage movements cannot be easily constructed. Recently, however, wage statistics have been subjected to special scientific study with a view to improving the methods of observation and comparison. It was long ago recognized that the daily or weekly rates of payment, the so-called "nominal wages," should be translated into "real wages," that is, the amount of commodities that the laborer can purchase with the money he receives. Therefore statements of money wages were supplemented by investigations into the purchasing power of money by converting them into "corn wages," by ascertaining the cost of food, clothing, and shelter, or by studying household budgets. It has long been clear, also, that in any satisfactory statement of wages, account must be taken not only of money payments but also of payments in kind; that, besides the laborer's main source of income, supplementary earnings must be considered; that, besides the wages of the head of a family, the earnings of the wife or the children must be considered. But to-day, rightly enough, still more is demanded. In place of mere estimates of average rates of weekly, monthly, or yearly wages, we demand statistics of wages actually paid, distinguishing the method of payment and the actual amount paid by the week as shown by the employer's books and pay rolls. We wish to know what part of the total payment forms the regular wage, what part, if any, is payment for overtime, how many days in the year a man is employed, how many and what sort of workers belong to each separate wage class; and, besides, we wish to have the information supplied by the employer verified by

[1] By Gustav Schmoller. Reprinted, by consent of the author and publisher, from Schmoller's Grundriss der allgemeinen Volkswirthschaftslehre, II [Duncker and Humblot, Leipzig, 1904].

information gathered from the laborers, and much more of the same sort of thing.

Of late years the materials for scientific study have been greatly improved in some directions. But the difficulty and expense of modern scientific investigation is so great that, in addition to the new and improved, but limited, material, we are obliged to use the older and cruder material in some cases, unless we are willing to renounce all attempts to make broad comparisons and obtain an extended basis for empirical study of wage theories.

I begin with some observations concerning historical movements of wages in those civilized countries which seem to me to be of the greatest importance, premising the remark that for the more remote periods I shall state the wages in kilograms of wheat or rye rather than in money, since this method will greatly facilitate comparisons. I should state also that all wages quoted for the thirteenth, fourteenth, fifteenth, and sixteenth centuries — and, to some extent, for the seventeenth and eighteenth centuries — are the occasional earnings of a small number of men; that they represent, far less than modern wage quotations, the entire income of the recipients; and that, therefore, their fluctuations do not have the same significance as fluctuations in modern rates of wages. Where nothing is said to the contrary the figures represent the average weekly wages of common laborers.

Something further should be said concerning the reduction of wages to terms of corn. Upon the basis of numerous investigations nineteenth-century landlords reckon that the average cost of maintaining an agricultural laborer ranges from 1600 to 2500 pounds of rye (800–1250 kilograms). By the same authorities the annual subsistence of a family is placed at from 3800 to 6600 pounds of wheat (1900–3300 kilograms). To-day it is supposed that the yearly consumption of cereals for each adult is about 250 kilograms, so that the actual consumption of a family consisting of two adults and two or three young persons or children can be fairly estimated to be some 1000 kilograms. We shall not be far out of the way if we reckon that the cereals consumed by such a family represent from one third to one fifth

of the total necessary expenditures. Therefore the total expenditure of a single adult can be placed at from 750 to 1250 kilograms, and that of a family can be placed at from 3000 to 5000 kilograms. This gives a weekly outlay of from 14.5 to 24 kilograms for an adult, and from 57.7 to 96 kilograms for a family. Perhaps we can say, and results reached empirically confirm this, that a weekly income of less than from 15 to 24 kilograms is hardly sufficient to maintain a single person, and is certainly a starvation wage for a family; that wages of from 50 to 60 kilograms are hardly sufficient for a family; that wages of from 90 to 120 kilograms are adequate to support a family; and that wages amounting to 200 kilograms or more are very satisfactory.

Rough and schematic as these estimates and figures are, and however much as they need to be modified in particular cases on account of differences in consumption and needs, or differences in the prices of grain, potatoes, meat, clothes, and lodgings, nevertheless they give approximately the necessary basis for comparisons of wages in various times and countries. There is no commodity more important in the budgets of the laborers of civilized states, and none the price of which affects so materially the cost of supporting a household. And numerous empirical investigations prove that, for early times as well as modern, differences in the conditions of living can be measured with general accuracy by computing the purchasing power of a laborer's wages according to our scale of 15, 60, 120, and 200 kilograms of grain.

For England we have in the investigations of Rogers, Cunningham, Hewins, Toynbee, Arthur Young, and later statisticians, a comparatively satisfactory basis for our investigation. We can conclude that in the thirteenth century hired laborers, who were not then numerous, earned about 35 kilograms of wheat per week; that between 1340 and 1350, on account of the scarcity of hands caused by the Great Plague, they received from 60 to 80 kilograms; and that up to the beginning of the sixteenth century wages remained at an equally high figure. Then came less favorable times. The decline of the peasantry, the depression of agriculture caused by the development of grazing,

and the revolution in the purchasing power of money, which was not followed by an equal change in wages, brought about a reduction of wages. The poor laws, also, and the regulation of wages by law must have contributed to produce vagabondage and the suffering of the laborers driven from the soil. Rogers estimates that the real wages of the laborer between 1500 and 1650 fell to one quarter of their former rate. I compute that he received on the average about 30 kilograms of wheat. According to Wiebe's estimates of money wages and Kulischer's estimates of real wages, the change of wages in England and in certain districts of Germany was as follows:

Periods	English Wages		Wages in Alsace	
	Money Wages	Real Wages	Money Wages	Real Wages
1451–1500	100	100	100	100
1551–1570	98	60	88	55
1571–1602	120	51	103	53
1603–1652	146	40	121	40
1653–1702	206	54	108	45

Periods	Wages at Münster	
	Money Wages	Real Wages
1447–1500	100	100
1501–1520	89	80
1521–1550	91	87
1551–1560	96	78

The deterioration in the condition of the laborers was quite general throughout Europe; yet it was not so great as the figures just given would seem to indicate. Wherever wages were generally paid in kind, where the number of hired laborers was small, where the number of peasant cultivators remained large, where journeymen were protected by gild traditions, or where domestic workers were protected by public regulation, the fall of wages was generally less marked. But when these favoring conditions did not exist the condition of the laborer was very bad.

In England money wages rose considerably — by nearly 120 per cent — between 1560 and 1800. Cunningham gives as a fair average: 1610, 3 shillings; 1685, 4 shillings; 1725, 4 to 5 shillings; 1795, 9 shillings. This was the result of general improvement in economic conditions. Real wages, to be sure, lagged behind money wages. From 1725 to 1750 a laborer could purchase 40 kilograms of wheat with 4 shillings; in 1795 his nine shillings would purchase but 30 kilograms. With the great increase of the cost of living between 1795 and 1846 the wages of agricultural laborers rose to 9 or 10 shillings, and those of artisans ranged from 13 to 16 shillings. With 10 shillings 40 kilograms of wheat could be bought, but in times of famine prices not more than 20 kilograms could be procured. In domestic industry wages sank lowest. Population increased rapidly, payment in kind and the old laws regulating wages disappeared, and at times commercial crises increased fearfully the evil of unemployment. The suffering of the laboring classes was far greater than it was during and after the fall of wages in the sixteenth and seventeenth centuries.

Before considering the rise of English wages since 1846 I will present here statistics for countries of Continental Europe during the earlier period.

In France, according to the investigations of Mantellier, which relate to Orleans, the daily wage of a common laborer, expressed in French money of to-day, has moved as follows:

1400–1475 = 0.81 fr.	1576–1600 = 1.09 fr.
1476–1500 = 0.69 "	1601–1675 = 1.16 "
1501–1575 = 0.50 "	1851–1860 = 2.25 "

And the *mine* (33 liters) of wheat cost:

1400–1475 = 2.09 fr.	1576–1600 = 5.92 fr.
1476–1500 = 1.97 "	1601–1675 = 3.18 "
1501–1575 = 2.66 "	1851–1860 = 6.63 "

This means that in the fifteenth century a laborer earned one third of a *mine* of wheat, in the sixteenth, one fifth of a *mine*, in the seventeenth, and again in the nineteenth, about one third of a *mine*. For the eighteenth century Moreau de Jonnès and

Foville compute that an agricultural laborer's family which would have needed 15 hektoliters of wheat for a satisfactory subsistence earned:

Years	1706	1789	1813
Yearly earnings	180 fr.	200 fr.	400 fr.
Cost of 15 hektoliters of wheat	283 "	240 "	315 "
Per cent earnings bear to cost of wheat	0.63	0.83	1.27

This explains the fact that such a large part of the rural population of France was poorly fed and in bitter poverty from 1650 to 1789.

Of the estimates of the historical course of wages in Germany I will present, in addition to the data already given, the results of Beiszel's investigations concerning the construction of the church at Xanthen. The daily wage amounted to the following sums (1 denarius = 2.7 pfennige):

	A Mason	A Sawyer
1356–1399	33 denarii	25 denarii
1450–1499	36 "	25 "
1550–1599	72 "	75 "
1600–1649	166 "	155 "
1650–1679	200 "	189 "

With his wages the mason could each week purchase the following quantities of wheat, rye, and barley:

1356–1399 = 150 kilograms
1450–1499 = 100 "
1550–1599 = 48 "
1600–1649 = 66 kilograms
1650–1679 = 78 "

The fall in real wages in Germany is well established by numerous other investigations, but less is known about the subsequent rise caused by the lack of laborers after the great war. Yet upon the whole the condition of the working classes remained unsatisfactory, especially when about 1600 the weekly earnings of a day laborer fell to 40 or 50 kilograms of rye, as I have estimated it did in Saxony. In the eighteenth century the wages of agricultural laborers in the eastern part of Germany ranged from 13 to 18 groschen (equal to 25 or 30 kilograms of wheat); while in the western part 30 groschen was the customary wage. But the difference between real wages in the two

sections was not so great as that in the money wages. In the towns wages stood at from 30 to 48 groschen, the higher rates occurring in prosperous industrial centers where occasionally the figures rose even higher, to 3, 4, and 5 thalers per week (15 groschen are equivalent to 25 kilograms of rye, and 4 thalers to 100 kilograms of rye).

During the entire first half of the nineteenth century wages changed but little in Germany. In country districts they amounted to 40 or 50 pfennige per day in the east, and ranged from 70 to 100 pfennige in the west and in rich districts. In declining industries, such as spinning and weaving, wages were sometimes lower than in the eighteenth century. But in others that were prosperous they ranged from 1.2 marks to 1.8 marks per day, and sometimes more, while rye cost from 2.5 to 4 marks per *scheffel* (40 kilograms). In agricultural districts a weekly wage of three marks (50 pfennige per day) meant that the laborer was earning above 40 kilograms of rye when the *scheffel* cost 2.5 marks, but only a little more than 20 kilograms when the *scheffel* of rye cost 4 marks or more. The artisan's wage of 1.8 marks per day, or 10.8 marks per week, was equivalent to 160 kilograms when the *scheffel* cost 2.5 marks, and 108 kilograms when it cost 4 marks. Between 1840 and 1860, when the cost of living rapidly increased, wages did not as a rule advance at an equal rate. From 1845 to 1855, in particular, the condition of many laborers was exceedingly miserable. Wages of even 10.8 marks per week would, at the prices then prevailing, purchase but 50 or 60 kilograms of rye; and wages of three marks would purchase correspondingly less. That was the period when typhus fever, attributed to hunger, raged in upper Silesia and elsewhere so fearfully that for some time it was feared that entire districts would be depopulated.

But such conditions were exceptional in Germany. In Belgium and Holland at that time I believe that wages were even lower; in France, however, they had risen materially since the Revolution. In England the condition of the lower half of the laboring classes remained until 1840 or 1850 rather worse than it was anywhere upon the continent, but the condition of the

upper half was considerably better. Tooke places the wages of the cotton spinner at 58 kilograms of meal in 1804, at 82.5 kilograms in 1814, and at 105 kilograms in 1823. The wages of hand weavers, to be sure, had fallen during the same period from 16 to 6 shillings per week.

Caird, the great authority, estimates English agricultural wages as follows: 1770 = 7 shillings; 1850 = 10 shillings; 1880 = 14 shillings. But during this century many rights and allowances had disappeared, such as rights of pasturage and cheap dwellings. The Labor Department places the average wages for 1850 at 9 shillings, for 1855 at 11 shillings, and for 1899 at almost 14 shillings; that is, an increase of 22 per cent between 1855 and 1899. But in 1855 the quarter of wheat cost 74 or 75 shillings, while to-day it costs 25 or 26 shillings. In 1855, therefore, 11 shillings would purchase 35 or 36 kilograms of wheat; whereas in 1899, 14 shillings would purchase 117 kilograms. The average wages of 14 shillings, however, is an average of varying quotations which range from 12 shillings in the south of England to 20 shillings in the north. And all unprejudiced observers consider the wage of 20 shillings to be insufficient, and say that the agricultural workman must have in addition a small holding of land or an old-age pension.

Great as are the variations in agricultural wages according to the locality, the soil, or activity, wages in manufacturing pursuits vary still more according to the prosperity and the form of management of the various branches. The chief English authorities compute that between 1840 and 1890 the general increase of wages averaged from 60 to 80 per cent, the increase ranging in different cases from 20 to 150 per cent. If the bulk of the laborers from 1820 to 1850 received from 13 to 16 shillings, they now receive from 20 to 35 shillings. The greatest increase occurred between 1840 and 1875; then the upward movement slackened, and at times stopped, only to begin again between 1887 and 1891 and between 1896 and 1900. The Webbs say that, among organized laborers, the wages range from 24 to 72 shillings. The weekly earnings of the Lancashire

cotton spinners have been estimated at 133 kilograms of flour in 1837 and 200 kilograms in 1891. . . .

By way of supplementing the data already offered concerning France, I will add that the yearly income of an agricultural laborer's family in 1814 is estimated at 400 francs, in 1860 at 500 francs, in 1870 or 1875 at 800 francs; while at these dates the 15 hektoliters of wheat such a family would need cost respectively 315, 305, and 345 francs. According to Leroy-Beaulieu the wages of bakers at Paris were 26 francs in 1830, 30 francs in 1854, 38 francs in 1867, and 45 francs in 1880. Chevalier computes that the increases of wages in different industries ranged from 40 to 200 and even 300 per cent; and adds that bread remained unchanged in price, meat increased 50 per cent, milk 25 per cent, and rent 100 per cent, while clothes and groceries became much cheaper. The yearly earnings of miners in 1800 were 300 francs, in 1815 they were 593 francs, and in 1877 they were 1002 francs. Wages in the provinces have not advanced so much as wages in the large cities, but the wages of the lower classes of labor, of simple hand labor, and of women, have risen more than the wages of the better trained male workers.

In Germany wages rose little during the fifties, with the exception of a few individual localities and trades; and from 1850 to 1865 such advance as occurred hardly offset the increase in the cost of living. The first important general increase followed 1865 and lasted until 1875. Then followed a slight decrease, and another moderate increase lasting until 1900.

According to inquiries made in 1849, 1873, and 1892, the weekly wages of the free agricultural laborers in the six eastern provinces of Prussia stood as follows:

Year	Money Wages	Wages in Rye
1800	2.40 marks	
1849	3.00 to 4.20 "	30.0 kilograms
1873	4.80 to 7.20 "	45.6 "
1892	7.00 to 9.00 "	60.0 "

* * * * * * * *

I may present the following data concerning the wages of industrial workers. A compositor who prior to 1847 received

from 24 to 26 *scheffel* of rye for setting one million units of type received in 1860 for the same work 48 *scheffel*, and in 1871 he received 83 *scheffel*, which would be equivalent to 16.5 marks or 100 kilograms of rye. A Saxon journeyman shoeman received from 6 to 8 marks per week in 1856, 12 to 17 marks from 1871 to 1880, and 11 to 13 marks from 1880 to 1886. In Rhenish Westphalia miners earned approximately the following average wages per year: 1865, 600 to 700 marks; 1874, 900 to 1000 marks; 1886 to 1888, 800 to 900 marks; 1890, 1100 to 1200 marks; 1898 to 1899, 1300 to 1500 marks. The daily wages of masons in Berlin were from 2 to 2.5 marks between 1848 and 1850, and rose to 4.5 and even 6 marks per day during the last decade. . . .

I may add some yearly wages paid in Berlin in 1907, which are taken from the Statistical Yearbook of Berlin:

	Highest Rate	Lowest Rate	Mean Rate
Stonecutters	1800 marks	693 marks	1331 marks
Metal workers	1700 "	1200 "	1382 "
Lace workers	1080 "	720 "	920 "
Masons	1920 "	875 "	1322 "
Butchers	1586 "	910 "	1200 "
Brewers	1500 "	1350 "	1472 "
Shoemakers	578 "	560 "	569 "
Hairdressers	1046 "	980 "	1014 "

With 600 marks one could purchase, upon the basis of the prices that prevailed in Germany from 1892 to 1899, 4600 kilograms of rye and 3800 kilograms of wheat; and with 1000 marks one could purchase, respectively, 7600 kilograms and 6400 kilograms. This would mean a weekly supply of from 73 to 146 kilograms; while, with an income of 1500 marks per year, the weekly earnings would be over 200 kilograms. A yearly income of from 600 to 1200 marks for the head of a family, and a family income of from 1000 to 1500 marks if the wife or children also work, can be taken as representative figures for the earnings of German workmen. This is a sum which for an unmarried man of from 18 to 25 years is larger than is necessary; but for a family an income of 1000 marks is still too

small, while one of 1500 marks may be considered satisfactory. In any case it is an income which equals that of the small peasant proprietor, the handworker, the schoolmaster, and the class of subordinate officials. Such a family can steadily improve its position if the wife is thrifty, the husband is temperate, and the housing conditions are tolerable.

3. Adam Smith on Wages and Profits in the Different Employments of Labor and Stock[1]

The whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighbourhood, be either perfectly equal or continually tending to equality. If in the same neighbourhood, there was any employment evidently either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the level of other employments. This at least would be the case in a society where things were left to follow their natural course, where there was perfect liberty, and where every man was perfectly free both to choose what occupation he thought proper, and to change it as often as he thought proper. Every man's interest would prompt him to seek the advantageous, and to shun the disadvantageous employment.

Pecuniary wages and profit, indeed, are everywhere in Europe extremely different according to the different employments of labour and stock. But this difference arises partly from certain circumstances in the employments themselves, which, either really or at least in the imaginations of men, make up for a small pecuniary gain in some, and counterbalance a great one in others ; and partly from the policy of Europe, which nowhere leaves things at perfect liberty.

[1] Wealth of Nations, Bk. I, chap. x.

Part I. Inequalities arising from the Nature of the Employments themselves

The five following are the principal circumstances, which, so far as I have been able to observe, make up for a small pecuniary gain in some employments, and counterbalance a great one in others: I. The agreeableness or disagreeableness of the employments themselves; II. The easiness and cheapness, or the difficulty and expense of learning them; III. The constancy or inconstancy of employment in them; IV. The small or great trust which must be reposed in those who exercise them; and V. The probability or improbability of success in them.

I. The wages of labour vary with the ease or hardship, the cleanliness or dirtiness, the honourableness or dishonourableness of the employment. Thus in most places, take the year round, a journeyman tailor earns less than a journeyman weaver. His work is much easier. A journeyman weaver earns less than a journeyman smith. His work is not always easier, but it is much cleaner. A journeyman blacksmith, though an artificer, seldom earns so much in twelve hours as a collier, who is only a labourer, does in eight. His work is not quite so dirty, is less dangerous, and is carried on in daylight and above ground. Honour makes a great part of the reward of all honourable professions. In point of pecuniary gain, all things considered, they are generally underrecompensed, as I shall endeavour to show by-and-by. Disgrace has the contrary effect. The trade of a butcher is a brutal and an odious business; but it is in most places more profitable than the greater part of trades. The most detestable of all employments, that of public executioner, is, in proportion to the quantity of work done, better paid than any common trade whatever.

Hunting and fishing, the most important employments of mankind in the rude state of society, become in its advanced state their most agreeable amusements, and they pursue for pleasure what they once followed from necessity. In the advanced state of society, therefore, they are all very poor who follow as a trade what other people pursue as a pastime. Fishermen have been so since the time of Theocritus (Idyllium xxi).

A poacher is everywhere a very poor man in Great Britain. In countries where the rigour of the law suffers no poachers, the licensed hunter is not in a much better condition. The natural taste for those employments makes more people follow them than can live comfortably by them, and the produce of their labour, in proportion to its quantity, comes always too cheap to market to afford anything but the most scanty subsistence to the labourers.

Disagreeableness and disgrace affect the profits of stock in the same manner as the wages of labour. The keeper of an inn, never master of his own house, and exposed to the brutality of every drunkard, exercises neither a very agreeable nor a very creditable business. There is scarce any trade in which a small stock yields so great a profit.

II. The wages of labour vary with the easiness and cheapness, or the difficulty and expense of learning the business.

When an expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital. It must do this too in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as to the more certain duration of the machine. The difference between the wages of skilled labour and those of common labour, is founded upon this principle. The policy of Europe considers the labour of all mechanics, artificers, and manufacturers, as skilled labour; and that of all country labourers as common labour. It seems to suppose that of the former to be of a more nice and delicate nature than that of the latter. It is so perhaps in some cases; but in the greater part it is quite otherwise as I shall endeavour to show by-and-by. The laws and

customs of Europe, therefore, in order to qualify any person for exercising the one species of labour, impose the necessity of an apprenticeship, though with different degrees of rigour in different places. They leave the other free and open to everybody. During the continuance of the apprenticeship, the whole labour of the apprentice belongs to his master. In the meantime he must, in many cases, be maintained by his parents or relations, and in almost all cases must be clothed by them. Some money too is commonly given to the master for teaching him his trade. They who cannot give money, give time, or become bound for more than the usual number of years; a consideration which, though it is not always advantageous to the master, on account of the usual idleness of apprentices, is always disadvantageous to the apprentice. In country labour, on the contrary, the labourer, while he is employed about the easier, learns the more difficult parts of his business, and his own labour maintains him through all the different stages of his employment. It is reasonable, therefore, that in Europe the wages of mechanics, artificers, and manufacturers, should be somewhat higher than those of common labourers. They are so accordingly, and their superior gains make them in most places be considered as a superior rank of people. This superiority, however, is generally very small; the daily or weekly earnings of journeymen in the more common sorts of manufactures, such as those of plain linen and woollen cloth, computed at an average are, in most places, very little more than the day wages of common labourers. Their employment is more steady and uniform, and the superiority of their earnings, taking the whole year together, may be greater. It seems evidently to be no greater than what is sufficient to compensate the superior expense of their education. Education in the ingenious arts and in the liberal professions, is still more tedious and expensive. The pecuniary recompense, therefore, of painters and sculptors, of lawyers and physicians, ought to be much more liberal: and it is so accordingly.

The profits of stock seem to be very little affected by the easiness or difficulty of learning the trade in which it is employed. All the different ways in which stock is commonly

employed in great towns, seem, in reality, to be almost equally easy and equally difficult to learn. One branch either of foreign or domestic trade, cannot well be a much more intricate business than another.

III. The wages of labour in different occupations vary with the constancy or inconstancy of employment.

Employment is much more constant in some trades than in others. In the greater part of manufactures, a journeyman may be pretty sure of employment almost every day in the year that he is able to work. A mason or bricklayer, on the contrary, can work neither in hard frost nor in foul weather, and his employment at all other times depends upon the occasional calls of his customers. He is liable, in consequence, to be frequently without any. What he earns, therefore, while he is employed, must not only maintain him when he is idle, but make him some compensation for those anxious and desponding moments which the thought of so precarious a situation must sometimes occasion. Where the computed earnings of the greater part of manufacturers, accordingly, are nearly upon a level with the day wages of common labourers, those of masons and bricklayers are generally from one-half more to double those wages. Where common labourers earn four and five shillings a week, masons and bricklayers frequently earn seven and eight; where the former earn six, the latter often earn nine and ten, and where the former earn nine or ten, as in London, the latter commonly earn fifteen and eighteen. No species of skilled labour, however, seems more easy to learn than that of masons and bricklayers. Chairmen in London, during the summer season, are said sometimes to be employed as bricklayers. The high wages of those workmen, therefore, are not so much the recompense of their skill, as the compensation for the inconstancy of their employment.

A house carpenter seems to exercise rather a nicer and more ingenious trade than a mason. In most places, however, for it is not universally so, his day-wages are somewhat lower. His employment, though it depends much, does not depend so entirely upon the occasional calls of his customers; and it is not so liable to be interrupted by the weather. When the trades

which generally afford constant employment, happen in a particular place not to do so, the wages of the workmen always rise a good deal above their ordinary proportion to those of common labour. In London almost all journeymen artificers are liable to be called upon and dismissed by their masters from day to day, and from week to week, in the same manner as day-labourers in other places. The lowest order of artificers, journeymen tailors, accordingly, earn there half-a-crown a-day, though eighteenpence may be reckoned the wages of common labour. In small towns and country villages, the wages of journeymen tailors frequently scarce equal those of common labour; but in London they are often many weeks without employment, particularly during the summer.

When the inconstancy of employment is combined with the hardship, disagreeableness, and dirtiness of the work, it sometimes raises the wages of the most common labour above those of the most skilful artificers. A collier working by the piece is supposed, at Newcastle, to earn commonly about double, and in many parts of Scotland about three times, the wages of common labour. His high wages arise altogether from the hardship, disagreeableness, and dirtiness of his work. His employment may, upon most occasions, be as constant as he pleases. The coalheavers in London exercise a trade which in hardship, dirtiness, and disagreeableness, almost equals that of colliers; and from the unavoidable irregularity in the arrivals of coal-ships, the employment of the greater part of them is necessarily very inconstant. If colliers, therefore, commonly earn double and triple the wages of common labour, it ought not to seem unreasonable that coalheavers should sometimes earn four and five times those wages. In the inquiry made into their condition a few years ago, it was found that at the rate at which they were then paid, they could earn from six to ten shillings a day. Six shillings are about four times the wages of common labour in London, and in every particular trade the lowest common earnings may always be considered as those of the far greater number. How extravagant soever those earnings may appear, if they were more than sufficient to compensate all the disagreeable

circumstances of the business, there would soon be so great a number of competitors as, in a trade which has no exclusive privilege, would quickly reduce them to a lower rate. The constancy or inconstancy of employment cannot affect the ordinary profits of stock in any trade. Whether the stock is or is not constantly employed depends, not upon the trade, but the trader.

IV. The wages of labour vary according to the small or great trust which must be reposed in the workmen.

The wages of goldsmiths and jewellers are everywhere superior to those of many other workmen, not only of equal, but of much superior ingenuity, on account of the precious materials with which they are necessarily intrusted. We trust our health to the physician ; our fortune, and sometimes our life and reputation, to the lawyer and attorney. Such confidence could not safely be reposed in people of a very mean and low condition. Their reward must be such, therefore, as may give them that rank in the society which so important a trust requires. The long time and the great expense which must be laid out in their education, when combined with this circumstance, will necessarily enhance still further the price of their labour. When a person employs only his own stock in trade, there is no trust ; and the credit which he may get from other people depends, not upon the nature of his trade, but upon their opinion of his fortune, probity, and prudence. The different rates of profit, therefore, in the different branches of trade, cannot arise from the different degrees of trust reposed in the traders.

V. The wages of labour in different employments vary according to the probability or improbability of success in them.

The probability that any particular person shall ever be qualified for the employment to which he is educated, is very different in different occupations. In the greater part of mechanic trades success is almost certain, but very uncertain in the liberal professions. Put your son apprentice to a shoemaker, there is little doubt of his learning to make a pair of shoes : but send him to study the law, it is at least twenty to one if ever he makes such a proficiency as will enable him to live by the business. In a

perfectly fair lottery, those who draw the prizes ought to gain all that is lost by those who draw the blanks. In a profession where twenty fail for one that succeeds, that one ought to gain all that should have been gained by the unsuccessful twenty. The counsellor-at-law who, perhaps, at nearly forty years of age, begins to make something by his profession, ought to receive the retribution, not only of his own so tedious and expensive education, but of that of more than twenty others who are never likely to make anything by it. How extravagant soever the fees of counsellors-at-law may sometimes appear, their real retribution is never equal to this. Compute in any particular place, what is likely to be annually gained, and what is likely to be annually spent, by all the different workmen in any common trade, such as that of shoemakers or weavers, and you will find that the former sum will generally exceed the latter. But make the same computation with regard to all the counsellors and students at law, in all the different inns of court, and you will find that their annual gains bear but a very small proportion to their annual expense, even though you rate the former as high, and the latter as low, as can well be done. The lottery of the law is very far from being a perfectly fair lottery; and that, as well as many other liberal and honorable professions is, in point of pecuniary gain, under-recompensed.. Those professions keep their level, however, with other occupations, and, notwithstanding these discouragements, all the most generous and liberal spirits are eager to crowd into them. Two different causes contribute to recommend them. First, the desire of the reputation which attends upon superior excellence in any of them; and, secondly, the natural confidence which every man has more or less, not only in his own abilities, but in his own good fortune.

To excel in any profession in which but few arrive at mediocrity is the most decisive mark of what is called genius or superior talents. The public admiration which attends upon such distinguished abilities, makes always a part of their reward; a greater or smaller in proportion as it is higher or lower in degree. It makes a considerable part of that reward in the

profession of physic; a still greater perhaps in that of law; in poetry and philosophy it makes almost the whole.

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The over-weening conceit which the greater part of men have of their own abilities, is an ancient evil remarked by the philosophers and moralists of all ages. Their absurd presumption in their own good fortune has been less taken notice of. It is, however, if possible still more universal. There is no man living who when in tolerable health and spirits, has not some share of it. The chance of gain is by every man more or less overvalued, and the chance of loss is by most men undervalued, and by scarce any man, who is in tolerable health and spirits, valued more than it is worth.

That the chance of gain is naturally overvalued, we may learn from the universal success of lotteries. The world neither ever saw nor ever will see a perfectly fair lottery; or one in which the whole gain compensated the whole loss; because the undertaker could make nothing by it. In the state lotteries the tickets are really not worth the price which is paid by the original subscribers, and yet commonly sell in the market for 20, 30, and sometimes 40 per cent. advance. The vain hope of gaining some of the great prizes is the sole cause of this demand. The soberest people scarce look upon it as a folly to pay a small sum for the chance of gaining ten or twenty thousand pounds, though they know that even that small sum is perhaps twenty or thirty per cent. more than the chance is worth. In a lottery in which no prize exceeded £20, though in other respects it approached nearer to a perfectly fair one than the common state lotteries, there would not be the same demand for tickets. In order to have a better chance for some of the great prizes, some people purchase several tickets, and others, small shares in a still greater number. There is not, however, a more certain proposition in mathematics than that the more tickets you adventure upon, the more likely you are to be a loser. Adventure upon all the tickets in the lottery, and you lose for certain, and the greater the number of your tickets, the nearer you approach to this certainty.

That the chance of loss is frequently undervalued, and scarce ever valued more than it is worth, we may learn from the very moderate profit of insurers. In order to make insurance either from fire or sea risk, a trade at all, the common premium must be sufficient to compensate the common losses, to pay the expense of management, and to afford such a profit as might have been drawn from an equal capital employed in any common trade. The person who pays no more than this, evidently pays no more than the real value of the risk, or the lowest price at which he can reasonably expect to insure it. But though many people have made a little money by insurance, very few have made a great fortune; and from this consideration alone, it seems evident enough that the ordinary balance of profit and loss is not more advantageous in this than in other common trades by which so many people make fortunes. Moderate, however, as the premium of insurance commonly is, many people despise the risk too much to care to pay it. Taking the whole kingdom at an average nineteen houses in twenty, or rather, perhaps, ninety-nine in a hundred, are not insured from fire. Sea risk is more alarming to the greater part of people, and the proportion of ships insured to those not insured is much greater. Many sail, however, at all seasons, and even in time of war, without any insurance. This may sometimes perhaps be done without any imprudence. When a great company, or even a great merchant has twenty or thirty ships at sea, they may, as it were, insure one another. The premium saved upon them all may more than compensate such losses as they are likely to meet with in the common course of chances. The neglect of insurance upon shipping, in the same manner as upon houses, is, in most cases, the effect of no such nice calculation, but of mere rashness and presumptuous contempt of the risk run.

The contempt of risk and the presumptuous hope of success, are in no period of life more active than at the age at which young people choose their professions. How little the fear of misfortune is then capable of balancing the hope of good luck, appears still more evidently in the readiness of the common people to enlist as soldiers, or to go to sea, than in the eagerness

of those of better fashion to enter into what are called the liberal professions. What a common soldier may lose is obvious enough. Without regarding the danger, however, young volunteers never enlist so readily as at the beginning of a war; and though they have scarce any chance of preferment, they figure to themselves, in their youthful fancies, a thousand occasions of acquiring honour and distinction which never occur. These romantic hopes make the whole price of their blood. Their pay is less than that of common labourers, and in actual service their fatigues are much greater.

The lottery of the sea is not altogether so disadvantageous as that of the army. The son of a creditable labourer or artificer may frequently go to sea with his father's consent; but if he enlists as a soldier it is always without it. Other people see some chance of his making something by the one trade: nobody but himself sees any of his making anything by the other. The great admiral is less the object of public admiration than the great general, and the highest success in the sea service promises a less brilliant fortune and reputation than equal success in the land. The same difference runs through all the inferior degrees of preferment in both. By the rules of precedency a captain in the navy ranks with a colonel in the army; but he does not rank with him in the common estimation. As the great prizes in the lottery are less, the smaller ones must be more numerous. Common sailors, therefore, more frequently get some fortune and preferment than common soldiers, and the hope of those prizes is what principally recommends the trade. Though their skill and dexterity are much superior to that of almost any artificers, and though their whole life is one continual scene of hardship and danger, yet for all this dexterity and skill, for all those hardships and dangers, while they remain in the condition of common sailors, they receive scarce any other recompense but the pleasure of exercising the one, and of surmounting the other. Their wages are not greater than those of common labourers at the port which regulates the rate of seamen's wages. As they are continually going from port to port, the monthly pay of those who sail from all the different ports of Great Britain, is more

nearly upon the level than that of any other workmen in those different places; and the rate of the port to and from which the greatest number sail, that is the port of London, regulates that of all the rest. At London the wages of the greater part of the different classes of workmen are about double those of the same classes in Edinburgh. But the sailors who sail from the port of London seldom earn above three or four shillings a month more than those who sail from the port of Leith, and the difference is frequently not so great. In time of peace, and in the merchant service, the London price is from a guinea to about seven-and-twenty shillings the calendar month. A common labourer in London, at the rate of 9 or 10 shillings a week, may earn in the calendar month from 40 to 45 shillings. The sailor, indeed, over and above his pay, is supplied with provisions. Their value, may not perhaps always exceed the difference between his pay and that of the common labourer: and though it sometimes should, the excess will not be clear gain to the sailor, because he cannot share it with his wife and family, whom he must maintain out of his wages at home.

The dangers and hair-breadth escapes of a life of adventures, instead of disheartening young people, seem frequently to recommend a trade to them. A tender mother, among the inferior ranks of people, is often afraid to send her son to school at a seaport town, lest the sight of the ships, and the conversation and adventures of the sailors should entice him to go to sea. The distant prospect of hazards, from which we can hope to extricate ourselves by courage and address, is not disagreeable to us, and does not raise the wages of labour in any employment. It is otherwise with those in which courage and address can be of no avail. In trades which are known to be very unwholesome, the wages of labour are always remarkably high. Unwholesomeness is a species of disagreeableness, and its effects upon the wages of labour are to be ranked under that general head.

In all the different employments of stock, the ordinary rate of profit varies more or less with the certainty or uncertainty of the returns. These are, in general, less uncertain in the inland than in the foreign trade, and in some branches of foreign

trade than in others; in the trade to North America, for example, than in that to Jamaica. The ordinary rate of profit always rises more or less with the risk. It does not, however, seem to rise in proportion to it, or so as to compensate it completely. Bankruptcies are most frequent in the most hazardous trades. The most hazardous of all trades, that of a smuggler, though when the adventure succeeds it is likewise the most profitable, is the infallible road to bankruptcy. The presumptuous hope of success seems to act here as upon all other occasions, and to entice so many adventurers into those hazardous trades, that their competition reduces their profit below what is sufficient to compensate the risk. To compensate it completely, the common returns ought, over and above the ordinary profits of stock, not only to make up for all occasional losses, but to afford a surplus profit to the adventurers of the same nature with the profit of insurers. But if the common returns were sufficient for all, bankruptcies would not be more frequent than in other trades.

Of the five circumstances, therefore, which vary the wages of labour, two only affect the profits of stock; the agreeableness or disagreeableness of the business, and the risk or security with which it is attended. In point of agreeableness or disagreeableness, there is little or no difference in the far greater part of the different employments of stock; but a great deal in those of labour; and the ordinary profit of stock, though it rises with the risk, does not always seem to rise in proportion to it. It should follow from all this, that, in the same society or neighbourhood, the average and ordinary rates of profit in the different employments of stock should be more nearly upon the level than the pecuniary wages of the different sorts of labour. They are so accordingly. The difference between the earnings of a common labourer and those of a well employed lawyer or physician, is evidently much greater than that between the ordinary profits in any two different branches of trade. The difference in the profits of different trades, is generally a deception arising from not distinguishing what ought to be considered as wages, from what ought to be considered as profit.

Apothecaries' profit is become a bye-word, denoting something uncommonly extravagant. This great apparent profit, however, is frequently no more than the reasonable wages of labour. The skill of an apothecary is a much nicer and more delicate matter than that of any artificer whatever; and the trust which is reposed in him is of much greater importance. He is the physician of the poor in all cases, and of the rich when the distress or danger is not very great. His reward, therefore, ought to be suitable to his skill and his trust, and it arises generally from the price at which he sells his drugs. But the whole drugs which the best employed apothecary, in a large market town, will sell in a year, may not perhaps cost him above thirty or forty pounds. Though he should sell them, therefore, for three or four hundred, or at a thousand per cent. profit, this may frequently be no more than the reasonable wages of his labour charged, in the only way in which he can charge them, upon the price of his drugs. The greater part of the apparent profit is wages disguised in the garb of profit.

In a small seaport town, a little grocer will make forty or fifty per cent. upon a stock of a single hundred pounds, while a considerable wholesale merchant in the same place will scarce make eight or ten per cent. upon a stock of ten thousand. The trade of the grocer may be necessary for the conveniency of the inhabitants, and the narrowness of the market may not admit the employment of a larger capital in the business. The man, however, must not only live by his trade, but live by it suitably to the qualifications which it requires. Besides possessing a little capital, he must be able to read, write and account, and must be a tolerable judge too of perhaps fifty or sixty different sorts of goods, their prices, qualities, and the markets where they are to be had cheapest. He must have all the knowledge, in short, that is necessary for a great merchant, which nothing hinders him from becoming but the want of a sufficient capital. Thirty or forty pounds a year cannot be considered as too great a recompense for the labour of a person so accomplished. Deduct this from the seemingly great profits of his capital, and little more will remain, perhaps, than the ordinary profits of

stock. The greater part of the apparent profit is, in this case too, real wages.

The difference between the apparent profit of the retail and that of the wholesale trade, is much less in the capital than in small towns and country villages. Where ten thousand pounds can be employed in the grocery trade, the wages of the grocer's labour make but a very trifling addition to the real profits of the wealthy stock. The apparent profits of the wealthy retailer, therefore, are there more nearly upon a level with those of the wholesale merchant. It is upon this account that goods sold by retail are generally as cheap and frequently much cheaper in the capital than in small towns and country villages. Grocery goods, for example, are generally much cheaper; bread and butcher's-meat frequently as cheap. It costs no more to bring grocery goods to the great town than to the country village; but it costs a great deal more to bring corn and cattle, as the greater part of them must be brought from a much greater distance. The prime costs of grocery goods, therefore, being the same in both places, they are cheapest where the least profit is charged upon them. The prime cost of bread and butcher's-meat is greater in the great town than in the country village; and though the profit is less, therefore they are not always cheaper there, but often equally cheap. In such articles as bread and butcher's-meat, the same cause which diminishes apparent profit, increases prime cost. The extent of the market, by giving employment to greater stocks, diminishes apparent profit; but by requiring supplies from a greater distance, it increases prime cost. This diminution of the one and increase of the other seem, in most cases, nearly to counterbalance one another; which is probably the reason that, though the prices of corn and cattle are commonly very different in different parts of the kingdom, those of bread and butcher's-meat are generally very nearly the same through the greater part of it.

Though the profits of stock both in the wholesale and retail trade are generally less in the capital than in small towns and country villages, yet great fortunes are frequently acquired from small beginnings in the former, and scarce ever in the latter. In

small towns and country villages, on account of the narrowness of the market, trade cannot always be extended as stock extends. In such places, therefore, though the rate of a particular person's profits may be very high, the sum or amount of them can never be very great, nor consequently that of his annual accumulation. In great towns, on the contrary, trade can be extended as stock increases, and the credit of a frugal and thriving man increases much faster than his stock. His trade is extended in proportion to the amount of both, and the sum or amount of his profits is in proportion to the extent of his trade, and his annual accumulation in proportion to the amount of his profits. It seldom happens, however, that great fortunes are made even in great towns by any one regular, established, and well-known branch of business, but in consequence of a long life of industry, frugality, and attention. Sudden fortunes, indeed, are sometimes made in such places by what is called the trade of speculation. The speculative merchant exercises no one regular, established, or well-known branch of business. He is a corn merchant this year, and a wine merchant the next, and a sugar, tobacco, or tea merchant the year after. He enters into every trade when he foresees that it is likely to be more than commonly profitable, and he quits it when he foresees that its profits are likely to return to the level of other trades. His profits and losses, therefore, can bear no regular proportion to those of any one established and well-known branch of business. A bold adventurer may sometimes acquire a considerable fortune by two or three successful speculations ; but is just as likely to lose one by two or three unsuccessful ones. This trade can be carried on nowhere but in great towns. It is only in places of the most extensive commerce and correspondence that the intelligence requisite for it can be had.

The five circumstances above mentioned, though they occasion considerable inequalities in the wages of labour and profits of stock, occasion none in the whole of the advantages and disadvantages, real or imaginary, of the different employments of either. The nature of those circumstances is such, that they make up for a small pecuniary gain in some, and counterbalance a great one in others.

In order, however, that this equality may take place in the whole of their advantages or disadvantages, three things are requisite even where there is the most perfect freedom. First, the employments must be well known and long established in the neighbourhood; secondly, they must be in their ordinary or what may be called their natural state; and, thirdly, they must be the sole or principal employments of those who occupy them.

I. This equality can take place only in those employments which are well known, and have been long established in the neighbourhood.

Where all other circumstances are equal, wages are generally higher in new than in old trades. When a projector attempts to establish a new manufacture, he must at first entice his workmen from other employments by higher wages than they can either earn in their own trades, or than the nature of his work would otherwise require, and a considerable time must pass away before he can venture to reduce them to the common level. Manufactures for which the demand arises altogether from fashion and fancy, are continually changing, and seldom last long enough to be considered as old established manufactures. Those, on the contrary, for which the demand arises chiefly from use or necessity, are less liable to change, and the same form or fabric may continue in demand for whole centuries together. The wages of labour, therefore, are likely to be higher in manufactures of the former, than in those of the latter kind. Birmingham deals chiefly in manufactures of the former kind; Sheffield in those of the latter; and the wages of labour in those two different places, are said to be suitable to this difference in the nature of their manufactures.

The establishment of any new manufacture, of any new branch of commerce, or of any new practice in agriculture, is always a speculation, from which the projector promises himself extraordinary profits. These profits sometimes are very great, and sometimes, more frequently perhaps, they are quite otherwise; but in general they bear no regular proportion to those of other old trades in the neighbourhood. If the project succeeds, they are commonly at first very high. When the trade or practice becomes

thoroughly established and well known, the competition reduces them to the level of other trades.

II. This equality in the whole of the advantages and disadvantages of the different employments of labour and stock, can take place only in the ordinary, or the natural state of those employments.

The demand for almost every different species of labour is sometimes greater and sometimes less than usual. In the one case the advantages of the employment rise above, in the other they fall below, the common level. The demand for country labour is greater at hay-time and harvest, than during the greater part of the year; and wages rise with the demand. In time of war, when forty or fifty thousand sailors are forced from the merchant service into that of the king, the demand for sailors to merchant ships necessarily rises with their scarcity, and their wages upon such occasions commonly rise from a guinea and seven-and-twenty shillings, to forty shillings and three pounds a month. In a decaying manufacture, on the contrary, many workmen, rather than quit their old trade, are contented with smaller wages than would otherwise be suitable to the nature of their employment.

The profits of stock vary with the price of the commodities in which it is employed. As the price of any commodity rises above the ordinary or average rate, the profits of at least some part of the stock that is employed in bringing it to market, rise above their proper level, and as it falls they sink below it. All commodities are more or less liable to variations of price, but some are much more so than others. In all commodities which are produced by human industry, the quantity of industry annually employed is necessarily regulated by the annual demand, in such a manner that the average annual produce may, as nearly as possible, be equal to the average annual consumption. In some employments, it has already been observed, the same quantity of industry will always produce the same, or very nearly the same quantity of commodities. In the linen or woollen manufactures, for example, the same number of hands will annually work up very nearly the same quantity of linen and woollen

cloth. The variations in the market price of such commodities, therefore, can arise only from some accidental variation in the demand. A public mourning raises the price of black cloth. But as the demand for most sorts of plain linen and woollen cloth is pretty uniform, so is likewise the price. But there are other employments in which the same quantity of industry will not always produce the same quantity of commodities. The same quantity of industry, for example, will, in different years, produce very different quantities of corn, wine, hops, sugar, tobacco, etc. The price of such commodities, varies not only with the variations of demand, but with the much greater and more frequent variations of quantity, and is extremely fluctuating. But the profit of some of the dealers must fluctuate with the price of the commodities. The operations of the speculative merchant are principally employed about such commodities. He endeavours to buy them up when he foresees that their price is likely to rise, and to sell them when it is likely to fall.

III. This equality in the whole of the advantages and disadvantages of different employments of labour and stock, can take place only in such as are the sole or principal employments of those who occupy them.

When a person derives his substance from one employment, which does not occupy the greater part of his time; in the intervals of his leisure he is often willing to work at another for less wages than would otherwise suit the nature of the employment.

There still subsists in many parts of Scotland a set of people called cotters or cottagers, though they were more frequent some years ago than they are now. They are a sort of out-servants of the landlords and farmers. The usual reward which they receive from their masters is a house, a small garden for pot herbs, as much grass as will feed a cow, and, perhaps, an acre or two of bad arable land. When their master has occasion for their labour, he gives them, besides, two pecks of oatmeal a week, worth about fifteen-pence sterling. During a great part of the year he has little or no occasion for their labour, and the cultivation of their own little possession is not sufficient to occupy the time which is left at their own disposal. When such occupiers were more

numerous than they are at present, they are said to have been willing to give their spare time for a very small recompense to any body, and to have wrought for less wages than other labourers. In ancient times they seem to have been common all over Europe. In countries ill cultivated and worse inhabited, the greater part of landlords and farmers could not otherwise provide themselves with the extraordinary number of hands, which country labour requires at certain seasons. The daily or weekly recompense which such labourers occasionally received from their masters, was evidently not the whole price of their labour. Their small tenement made a considerable part of it. This daily or weekly recompense, however, seems to have been considered as the whole of it, by many writers who have collected the prices of labour and provisions in ancient times, and who have taken pleasure in representing both as wonderfully low.

The produce of such labour comes frequently cheaper to market than would otherwise be suitable to its nature. Stockings in many parts of Scotland are knit much cheaper than they can anywhere be wrought upon the loom. They are the work of servants and labourers, who derive the principal part of their subsistence from some other employment. More than 1000 pair of Shetland stockings are annually imported into Leith, of which the price is from fivepence to sevenpence a pair. At Lerwick, the small capital of the Shetland islands, tenpence a day is a common price of common labour. In the same islands they knit worsted stockings to the value of a guinea a pair and upwards.

In opulent countries the market is generally so extensive, that any one trade is sufficient to employ the whole labour and stock of those who occupy it. Instances of people's living by one employment, and at the same time deriving some little advantage from another, occur chiefly in poor countries. The following instance, however, of something of the same kind is to be found in the capital of a very rich one. There is no city in Europe, I believe, in which house rent is dearer than in London, and yet I know no capital in which a furnished apartment can be hired so cheap. Lodging is not only much cheaper in London than in

Paris; it is much cheaper than in Edinburgh of the same degree of goodness; and what may seem extraordinary, the dearness of house rent is the cause of the cheapness of lodging. The dearness of house rent in London arises not only from those causes which render it dear in all great capitals, the dearness of labour, the dearness of all the materials of building, which must generally be brought from a great distance, and above all the dearness of ground rent, every landlord acting the part of a monopolist, and frequently exacting a higher rent for a single acre of bad land in a town, than can be had for a hundred of the best in the country; but it arises in part from the peculiar manners and customs of the people, which oblige every master of a family to hire a whole house from top to bottom. A dwelling house in England means everything that is contained under the same roof. In France, Scotland, and many other parts of Europe, it frequently means no more than a single story. A tradesman in London is obliged to hire a whole house in that part of the town where his customers live. His shop is upon the ground floor, and he and his family sleep in the garret; and he endeavours to pay a part of his house rent by letting the two middle stories to lodgers. He expects to maintain his family by his trade, and not by his lodgers. Whereas, at Paris and Edinburgh, the people who let lodgings have commonly no other means of subsistence; and the price of the lodging must pay, not only the rent of the house, but the whole expense of the family.

4. Historical Changes in the Rate of Interest[1]

In all discussions of the subject of interest the practical question is, How much must the debtor pay the creditor for the use of capital, or what is the amount of interest? For a long time it has been customary to compare the money value of the capital loaned with the money value of the monthly or yearly interest, and to express the latter as a percentage of the former.

[1] By Gustav Schmoller. Reprinted, by consent of the author and publisher, from Schmoller's Grundriss der allgemeinen Volkswirthschaftslehre, II [Duncker and Humblot, Leipzig, 1904].

The figure thus computed is called the rate of interest, and to-day interest is universally reckoned by years and percentages.

We have already presented many facts concerning the rate of interest in the section dealing with the development of the law relating to credit transactions, yet this material related chiefly to attempts to regulate the rate of interest by law. We now confront the question, What was the actual movement of the rate of interest? We shall seek to present the material in brief and summary fashion, and shall confine ourselves to the so-called customary rate of interest in ordinary business transactions, for long-time loans and under ordinary investment conditions. . . .

It is well known that an interest rate of from 50 to 80 per cent has existed, and still exists, among uncivilized peoples. For Greece, in her most flourishing days, von Müller tells us that the normal rate varied from 12 to 18 per cent, and that in maritime loans it rose to 33 per cent. In Rome we have already seen that the Twelve Tables sought to lower the rate to 10 per cent, and that Marcus Brutus exacted 48 per cent from provincials. According to Billeter, the rate was 50 per cent about 50 B.C.; and it sank to 4 per cent in the time of Augustus, rose from 5 to 6 per cent between the time of Trajan and that of Marcus Aurelius, and soon after that declined to 4 and even $3\frac{1}{2}$ per cent. From 400 A.D. to 1000 A.D. the rate of interest rose again to very high figures. During the Middle Ages 50 per cent was charged frequently in loans of grain. Roscher states that in 1228 in Verona the legal rate for loans of money was 12.5 per cent; that in Modena in 1270 it was 20 per cent; that in Brescia in 1268 it was 10 per cent; that Frederick II vainly sought to lower it to 10 per cent in Naples; and that in Florence in 1470 the Jews were forbidden to take more than 20 per cent. For France, d'Avenel thinks it safe to say that the rate for free capital was about 20 per cent prior to 1500, that land and houses were rented upon a 10 per cent basis, and that in other cases the rate seems to have ranged from 11 to 45 per cent. The French rate was higher than the Italian or the German. In England the legal rate was 10 per cent until 1600, but Lombards and Jews demanded even double that amount.

For Germany, according to the investigations of Neumann, Pauli, Stobbe, and others, we can assume a rate of 9 or 10 per cent in the Rhine valley in the thirteenth century, and a considerably higher rate in the eastern part of the country. In the fourteenth century the rate was somewhat lower, in the fifteenth it ranged in many places from 5 to 8 per cent, and in the sixteenth from 5 to 6 per cent. The Rhenish towns permitted the Jews to charge from 33 to 43 per cent in 1255; and similar, and even higher, rates were charged for small "weekly loans" up to the year 1500. In Alsace a rate of 4 or 5 per cent is found from 1400 onward.

In France the rate of interest fell in the sixteenth century, yet it still stood at 6 or 6½ per cent. In the seventeenth century it rose again to 6 or 8 per cent, falling to 5 per cent in the eighteenth century. In 1766 the government forbade a reduction to 4 per cent, just as the city council of Basel from 1677 to 1682 opposed a reduction to 3½ or 4 per cent, maintaining that the rate of 5 per cent was divinely ordained. In Germany the rate remained at 5 per cent until 1620. In England it stood at 6 or 8 per cent about 1700. On the authority of Child, Roscher states that in 1660 the rate of interest was 3 per cent in Italy and Holland, 7 per cent in France, 10 per cent in Scotland, 12 per cent in Ireland, 10 or 12 per cent in Spain, and 20 per cent in Turkey.

In 1737 the 3 per cent securities of the English government sold at 107; and in Germany a rate of 3 per cent is found in exceptional cases in the eighteenth century, as in Göttingen. In Holland, however, the rate fell quite generally to 2½ per cent. In all countries it tended to rise during the wars following the French Revolution; and this continued until 1820, Russia, France, and Austria, at least, being obliged to pay from 7 to 9 per cent upon their public loans between 1814 and 1820, while Prussia paid 5 or 6 per cent. At this period the German rate on mortgage loans stood at 4 per cent in the Rhine districts, and elsewhere at 5 or 6 per cent and even higher.

From 1820 to 1845, apart from temporary upward movements in 1830 and 1831, the rate of interest steadily declined in

western Europe, — generally from 5 to $3\frac{1}{2}$ per cent on the best public securities and mortgages. For the better class of securities it stood at a similar figure in the wealthiest places; while in southern Germany it was 4 per cent, and in the eastern provinces 5 per cent. Great reductions in the interest on public loans occurred between 1830 and 1845. In Austria, too, the government was paying not quite 4 per cent in the latter year.

From 1845 to 1871 a reactionary movement again set in. In this epoch of railroad construction, of the rapid introduction of machinery, and of general economic expansion the rate of interest rose from $3\frac{1}{2}$ to 5 per cent. Until 1848, and again from 1851 to 1853, it was about 4 per cent; then in 1854, on the outbreak of the Crimean War, it rose to 5 per cent. After that it declined somewhat until in 1863 and 1864 it rose again, and continued to rise until 1871. Upon the basis of the market quotations of their securities for a period of twenty months, various governments were paying the following rates of interest about 1863: Prussia, 4.4 per cent; Russia, 5.5; Italy, 6.8; Austria, 6.9. From 1860 to 1871 the outflow of capital to countries where high rates of interest ruled, assumed large proportions. Many capitalists came to look for a rate of from 5 to 7 per cent. In western Germany, indeed, the rate of mortgage interest stood at 3 or 4 per cent during the sixties, but in eastern Germany it was 6 or 7 per cent. Such conditions led to the founding of numerous mortgage banks.

From 1873, and particularly 1875 onward, the rate of interest declined once more. By 1884 the decline amounted to 1 per cent, and by 1895 a further decline of $1\frac{1}{2}$ per cent had occurred. States that had formerly paid 6 or 7 per cent raised capital at 4 or $4\frac{1}{2}$ per cent. Railroad construction and fixed investments in manufacturing enterprises had somewhat slackened. After 1885 a new period of debt conversions began, similar to the period 1830 to 1835. According to Neymark, between 1889 and 1896 the civilized countries converted 62.4 milliards of loans into securities bearing a lower interest, so that creditors submitted to an annual loss of one milliard of income. The creditors of Great Britain received $2\frac{3}{4}$ per cent

from 1888 to 1903, and from 1903 to 1923 will receive $2\frac{1}{2}$ per cent. In the United States, too, the rate for perfectly secure investments sank to $2\frac{1}{2}$ per cent,[1] and in central Europe it fell to 3 per cent. The French government's 3 per cent *rentes* were quoted in 1894 at 99.9, in 1897 at 103.1; while the 3 per cent Prussian and German imperial loans had reached par by 1895. But from 1895 to 1900 the great expansion of business led to another increase of interest rates, noticeably in Germany and to a less degree in England and France. In 1900 the French *rentes* fell to 99.5; and in 1899 the Prussian securities were quoted at 87.25, a fact which was due to the peculiar conditions of the German money market and its excessive demands for capital.

Upon the whole, both the commercial and the general rates of interest fall in periods of lessened business activity, such as that from 1880 to 1895, and rise in times of expansion, such as the years 1895 to 1900. Yet these fluctuations do not prevent a general decline over long periods of time. It is not inconceivable that, just as the rate of interest fell to 3 per cent in the eighteenth century, and to $2\frac{3}{4}$ or $2\frac{1}{2}$ per cent in the nineteenth, so in the twentieth century it will fall below 2 per cent, — possibly even $1\frac{1}{2}$ per cent.

In this summary no mention has been made of a multitude of minor and temporary fluctuations, since our purpose has been to give a general historical survey of the subject. Nor do the few facts here presented convey a sufficient idea of the local diversity in interest rates. Even to-day these differences are extremely great in Europe . . . ; in one place from 2 to 3 per cent is paid, and in another from 6 to 10, while commissions, allowances, and other charges complicate the matter. . . . Here we are interested primarily with the great historical fact of a reduction in the rate of interest from 50 to $3\frac{1}{2}$ and even $2\frac{1}{2}$ per cent; or, if we consider only the richer countries and

[1] It should be observed in this connection that while the United States has refunded much of its debt upon even a 2 per cent basis, this figure does not actually measure the rate of interest on public loans. United States bonds are used as security for bank notes and public deposits, and this fact accounts for the low nominal interest they bear. — Ed.

the last five centuries, a reduction from 10 to $2\frac{1}{2}$ per cent. These figures reveal one of the greatest changes that have ever occurred in economic life, technique, and social relations.

5. The Distribution of Urban Land Values[1]

Value in urban land is the resultant of economic or ground rent capitalized. Economic rent in urban land, as in agricultural land, measures its intrinsic or "original and indestructible" powers. Since the sole function of urban land is to furnish area on which buildings may be erected, economic rent measures the superiority of any location over the poorest location within the same city. Any utility may compete for any location within a city, and all land goes to the highest bidder; but the limited suitability, due to natural or acquired causes, of different areas for different purposes, is so marked that much land has but one utility. Here whatever competition there is will be among those of the same class of utilization. Where, owing to increase or decrease of various utilizations, their area and location change, competition among different classes of utilization arises. Practically all land within a city earns some economic rent, though it may be small, the final contrast being with the city's rentless circumference.

Economic rent is ascertained by deducting from the gross earnings of land and buildings, first, all taxes, insurance, repairs, and operating expenses, and next, average interest on the capital invested in the building. To make a correct showing the buildings must be suited to the location and managed with ordinary ability, or the apparent economic rent will have little or no bearing on the value of the land.

The rate of capitalization is based on the average interest rates of all investments, and fluctuates in general with them, although within closer limits and more slowly. Wide differences occur in the rates of capitalization of rents from land of different uses in the same city and smaller differences between

[1] By Richard M. Hurd. Reprinted, by consent of the author and the editors, from the *Yale Review*, August, 1902.

land having the same use in different cities. The stability of rents is the most vital point affecting the rate of capitalization, the minor factors being ease of convertibility and the attractive or unattractive character of utilization. In the same way that the rates of capitalization vary as to securities, government bonds selling below a 2 per cent basis, railroad bonds on a $3\frac{1}{2}$ per cent to 4 per cent basis, railroad stocks on a 4 per cent to 5 per cent basis, and industrials on a 7 per cent to 10 per cent basis, the rates of capitalization of urban rents vary between 4 per cent for the highest-class property in the largest cities, 5 per cent for second-grade property in the same cities, or for first-grade property in large cities, 6 per cent for third-grade property in the largest cities or the best property in small cities, 7 per cent, 8 per cent, and 10 per cent for tenements in the largest cities, and from 12 per cent to 18 per cent for temporary utilizations or disreputable purposes in the smaller cities. In general the larger the city and the higher the class of property, the greater the stability of rents, and ease of convertibility, and the lower the rate of capitalization.

Differences in rent are plainly apparent, but differences in rates of capitalization are not so generally taken account of, although a very large proportion of value in urban land comes from a low rate of capitalization. To illustrate, of two pieces of land yielding each an economic rent of $10,000 annually, one well located and improved with office building or retail shop might sell, excluding the building, on a 4 per cent basis, or for $250,000, while the other, covered with cheap tenements, might sell, excluding the buildings, on a 10 per cent basis, or for $100,000. Where high prices are paid for land covered with buildings fully rented but yielding no net income, the basis of value is the estimated economic rent when the land is fully improved with modern buildings. An addendum to the formula to cover the value of improperly improved or vacant land may be made as follows: Value is the resultant of the capitalization of the estimated future economic rent under the highest utilization. For example, land on Wall Street, covered with old four-story buildings fully rented, but yielding no net

income, recently sold for about $100 per square foot, the basis being the estimated earning power of the land improved with modern buildings.

Eliminating the individual and special causes controlling the location of small settlements, commerce and industry, operating on the basic material of topography, establish three principal types of city according to the method of transportation which first serves them. All settlements spring from other settlements and start at the most convenient point of contact with the outer world, this being usually a wharf where deep water and a high bank meet, if transportation is by water, the intersection of turnpikes topographically located, if transportation is by wagon, and a railroad depot placed for the convenient shipping of products, if transportation is by rail. At the start external factors control the internal structure of cities, the first buildings clustering around the first transportation terminal. Whatever the type of city, growth consists of movement away from the point of origin and is of two kinds: central, or in all directions, and axial, or along the water courses, railroads, and turnpikes which form the framework of the city. Electric street railroads and suburban railroads have greatly stimulated axial growth, producing star-shaped cities by contrast with the more circular form of the ancient walled towns. The chief modification of the shape of cities comes from the distorting effect of severe topographical faults, such as water surfaces or sharp elevations.

Starting with the origin of any city, utility in land arises when the first buildings are erected, but until there is economic rent there is no value in the land. Thus in New York, "Each settler was permitted to build his house where he pleased and to surround it by an inclosure of any convenient shape and size."[1] Also in Los Angeles, "Any one who wished a piece of land, either for building a home or for cultivation, applied to the *ayuntamiento* and received oral permission to go ahead and do whatever he pleased as long as he did not interfere with his

[1] History of Real Estate Building and Architecture in New York City, 1898, p. 4.

neighbor."[1] Later, when population increases so that lots less conveniently located are utilized, economic rent measures such advantage, and value arises, the prices for land being at first nominal, varying from $10 to $100 a lot. An apparent exception to the general law of no value in the site when the city starts, occurs where cities are speculatively undertaken and the future is discounted, lots selling at comparatively high prices in advance of utility. The difference between price and value is usually demonstrated before many years, the swing of the pendulum carrying these lots as far below their value as prices were formerly above it. Thus lots in Columbus, Ohio, which sold in 1812 at $200 to $300, sold in 1820 at $7 to $20,[2] and of recent instances there are many, such as the collapses in the early history of the speculatively started towns of West Superior, Wisconsin; Tacoma, Washington; Everett, Washington; and Birmingham, Alabama. The attempt to force economic rent from city land seems to be uniformly unsuccessful, history showing that cities grow and are not made, and that human beings cannot be uprooted and moved in large numbers and immediately adjust themselves to the new opportunities of a new environment.

The total value of the site of a city is broadly based on population and wealth, the physical city being the reflex of the total social activities of its inhabitants. The distribution of value follows closely after the distribution of utilities, the problem involving a classification of utilities, of the causes which influence their location, and of the resulting scale of values which they normally produce.

In villages of but a few hundred population, land may sell by the acre, and include some agricultural features; but when the population has increased to a few thousand a business center arises, the residences become separated from it and are driven to the circumference, and values run from $10 a front foot for residence property up to $100 or $150 a front foot for business property.

[1] C. D. Willard, History of Los Angeles, p. 176 [1901].
[2] J. H. Studer, History of Columbus, p. 25 [1873].

The smaller cities of under fifty thousand population exhibit normally along transportation lines a warehouse and wholesale section, which changes into a manufacturing section as the city is left, a retail-shopping district at the center, adjoining it an indeterminate zone utilized for institutions and boarding houses, then an outer zone of high grade or medium residences, and finally laborers' cottages at the periphery.

As cities grow, increasing specialization in business causes new subdivisions in the industrial organization whose integration tends continually to greater complexity in the city's structure.

Hence in the largest cities there arise many centers for various classes of business, a banking center, women's shopping centers, artisans' shopping centers, wholesale-retail centers, manufacturing specialized in small centers, amusement centers, club centers, and residence districts, divided into many grades, from the tenement sections near the factories and docks to the fashionable sections near the parks, while the axes of traffic run out in all directions from the city's center and carry retail shops of different grades through residence districts, the general result being great complexity in detail, with fairly simple and uniform succession of districts. Whatever the size or shape of a city the order of dependence of one utility upon another remains the same, as exhibited by the pursuit of the residence sections of different classes by the shops of similar classes which supply them, the following of the higher wholesale houses after retail shops which are their customers, and the slow advance of the banking and office section into the older retail or wholesale districts. The general characteristic of a business district is to move slowly and continuously from the point of origin, while residences, attracted by turnpikes or street railroads, move more rapidly, leaving sometimes vacant or otherwise utilized land behind them.

Change is a law of life, and since utilities in cities continually shift in location and area, the value of all urban land is in a state of unstable equilibrium. Change occurs not only at the circumference but throughout the whole area of the city, outward growth being due both to pressure from the center and

to aggregation at the edges. The method of progression in the outward pressure of one zone upon another is not always a superior utility displacing an inferior, since in some cases a superior utility moves on and leaves behind a vacuum, into which an inferior utility moves. Outlying residence districts, in proportion to their mass, quality, and distance from the center, exert an attracting force upon it, unless modified by topography.

In examining the distribution of values in some typical cities we may divide the land into two principal classes: business land and residence land, giving less consideration to land used for manufacturing, transportation, and special purposes, which, although having occasional high prices, lacks convertibility and has a more variable scale of values.

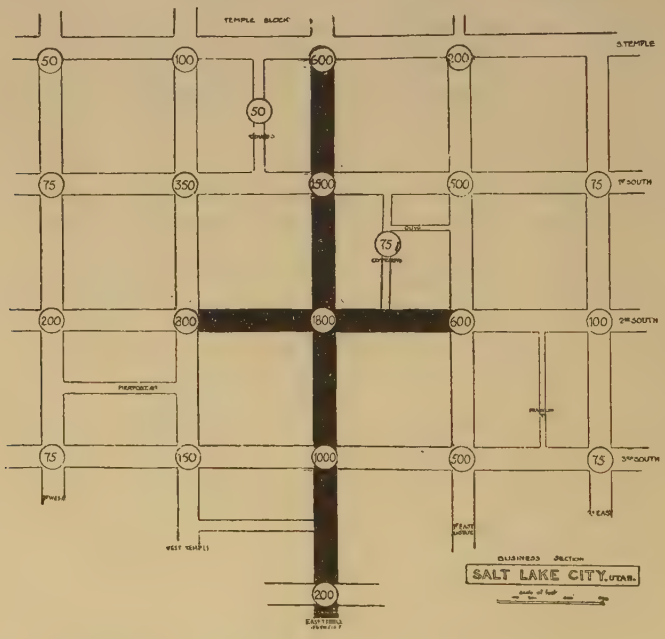
In the series of plats submitted the figures are intended to represent the value per front foot of the corners, except for New York, where the value per square foot is given, the naked land alone being valued and it being assumed that all lots are of the same depth, from 100 to 120 feet. An average valuation only can be given for the intersection of two streets, although the value of four corners often varies from 30 to 70 per cent. The value of inside property adjacent to these corners is almost always lower and may be figured at 25 per cent to 50 per cent less. The many variations which occur in adjacent lots are too complex to show on a small plat, the figures given being approximations based as far as possible on actual sales and known rentals.

Salt Lake City (population 53,531) is located where the Mormon trail through Emigration Pass reached the valley floor of the Great Salt Lake, and was laid out to the east of the river Jordan. The first dwellings were erected on the block bounded by Third and Fourth streets south, and Second and Third streets west, but the first store was erected at the intersection of Main Street and First South, this corner being now the second in value in the city. The Mormon Temple was the center around which the early life of the city revolved, and probably the reason that Main Street has always[1] been the

[1] R. F. Burton, The City of the Saints, p. 201 [1862].

principal street is because it ran from the city to the temple, and to Brigham Young's tithing yard on the adjacent block.

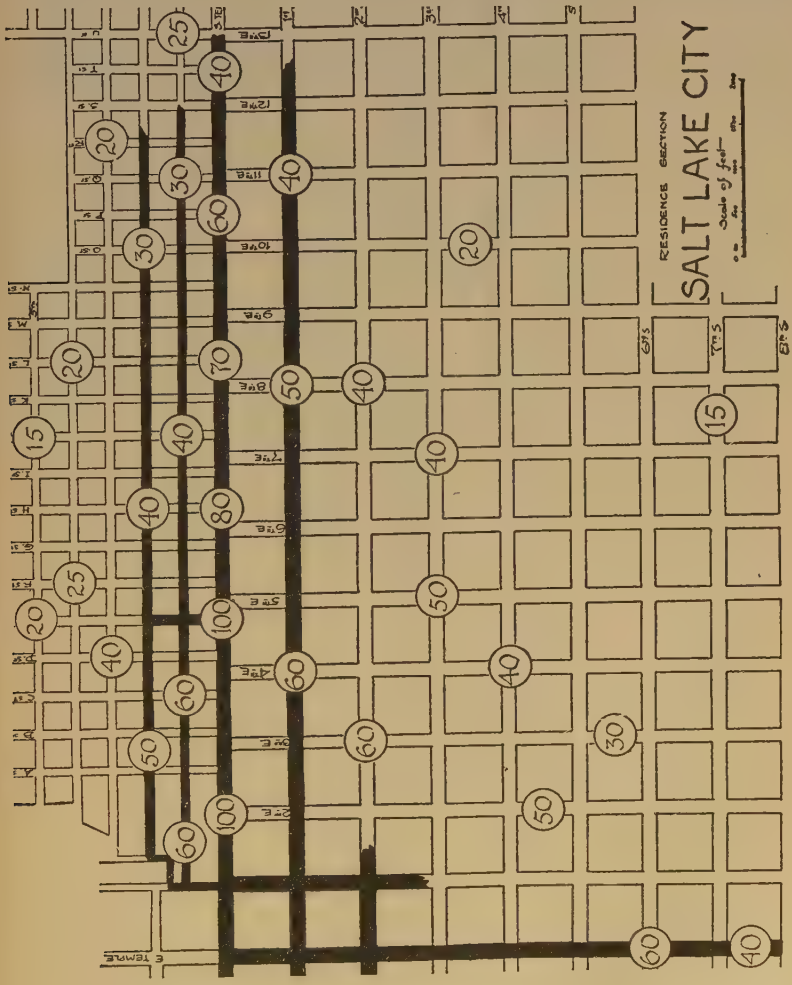
The chief peculiarity of the original plat[1] is the size of the blocks, which are 660 feet square, as compared with normal blocks of about 300 feet square. This results in one fourth as many corners in Salt Lake City as in the normal city, so that the two good intersections, those of Main Street with South



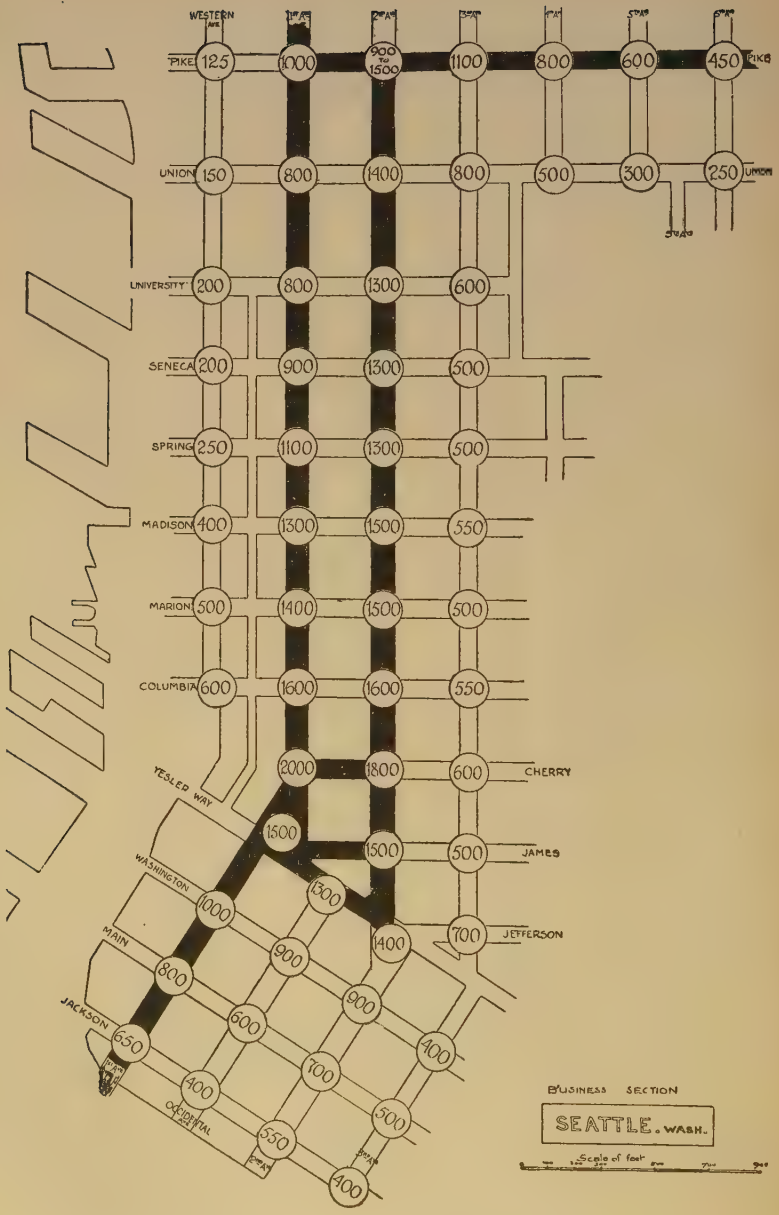
First and South Second streets, have an abnormal value reaching $1800 per front foot. The further results are to concentrate business, on account of the small number of streets leading away from the center, and to remove almost all the value from a tract 400 feet square at the center of each block, since a depth of only 100 to 120 feet can be utilized. Thus we find in a distance of 300 feet a drop from $1800 to $75 a foot, owing to the non-accessibility of the interior locations.

[1] Stanbury's *Report on Salt Lake, 1853*, p. 126.

Residences normally seek moderate hills, and in Salt Lake City the best residence district stretches east from the business center along the hill to the military reservation, the values



being highest on South Temple Street, the approach to the residence section, and diminishing to the north as the hill is climbed and to the east in proportion to distance. The level


WESTERN AVE
1ST AVE
2ND AVE
3RD AVE
4TH AVE
5TH AVE
6TH AVE
PIKE
125
1000
900 TO 1500
1100
800
600
450
PIKE
UNION
150
800
1400
800
500
300
250
UNION
UNIVERSITY
200
800
1300
600
SENECA
200
900
1300
500
SPRING
250
1100
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500
MADISON
400
1300
1500
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MARION
500
1400
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COLUMBIA
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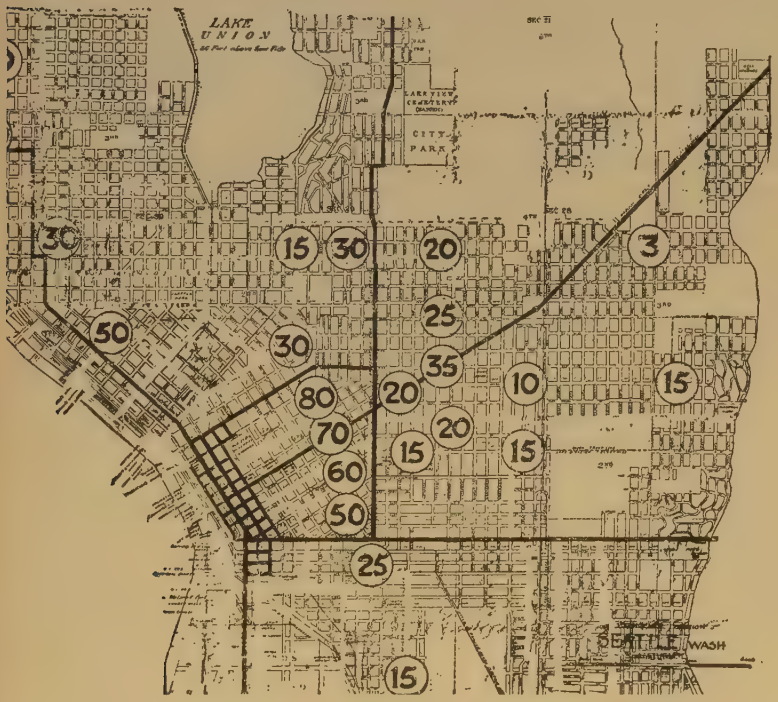
1800
600
CHERRY
YESLER WAY
1500
1500
500
JAMES
WASHINGTON
1000
1300
700
JEFFERSON
MAIN
800
900
1400
900
JACKSON
650
600
400
100
400
500
OCCIDENTAL
550
400
BUSINESS SECTION
SEATTLE. WASH.
Scale of feet

plain south of South Temple Street is more or less built up with moderate-class residences, values in general diminishing in proportion to distance.

Seattle (population 80,671) started at the Yesler saw mill at the foot of Yesler Way. Formerly First Avenue was the principal street, Second Avenue beginning to rival it after its regrading in 1890. The growth of the best residence section

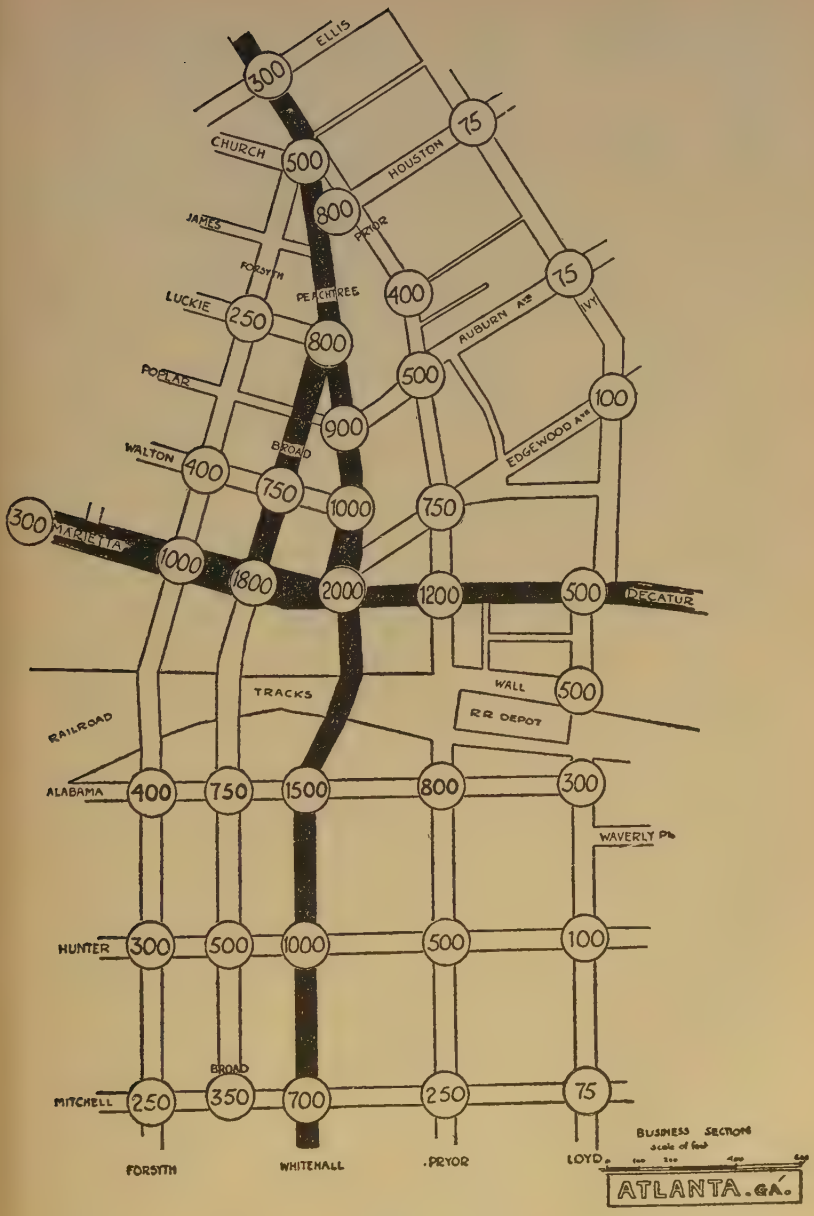


on the first hill east of the business section has exerted a lateral attraction, which, added to the growth of the city north and the development of Pike Street, has moved the higher general scale of values to Second Avenue and has recently with the aid of the new Post Office lifted values on Third Avenue. A wholesale and manufacturing district has been developed south of Yesler Way on made land, with values running from $400 to

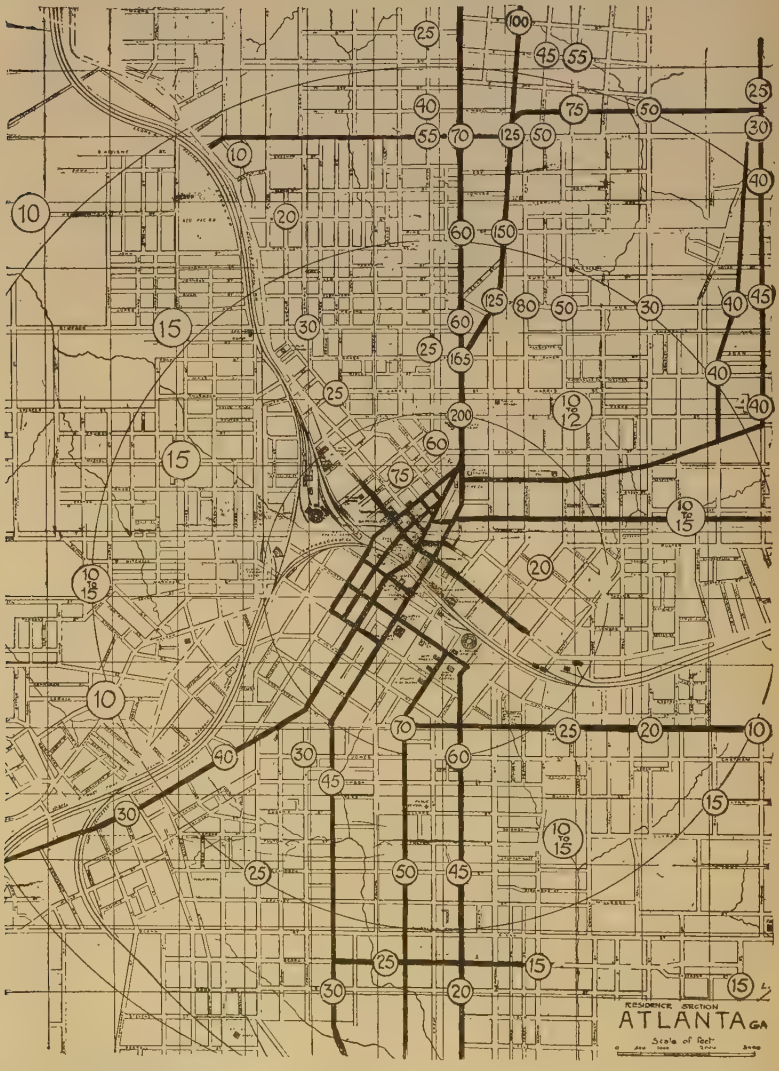
$1000, this district being continually extended by filling in the tide flats. In the distribution of residences in hilly cities the value curve follows closely the elevation curve, with the general scale diminishing in proportion to distance from the center. In Seattle the top of the first hill overlooking the city runs from $50 to $80 per front foot, the side of the hill being given up to boarding houses and institutions. Back of the first hill lies a hollow, with values running from $15 to $20 per front foot, while further out on the second hill values run up to $35. The hills to the north, being farther away and not being as fashionable as the first hill to the east, vary from $25 to $50 per foot, and the small hill to the south, owing to the bad approach and the view over the tide flats and the manufacturing section, varies from $10 to $15 per foot.

* * * * * * * *

Atlanta (population 89,872) furnishes one of the few examples of an inland city whose site is not intersected by a water course. In its origin and growth it has been purely a railroad town, the Union Depot being practically the starting point of the city. Two main turnpikes were laid out, Marietta and Decatur streets east and west, Peachtree and Whitehall streets north and south, whose intersection has only recently acquired the highest values in the city. The bulk of the population first located south of the railroad tracks, possibly owing to the location there of the state capitol, county courthouse, and city hall, and Whitehall Street, between Mitchell and Alabama, still remains the principal women's shopping street. The development of Peachtree Street as the one fashionable street of the city, drawing theaters, clubs, hotels, and office buildings after it, has at last moved the point of highest values from south of the railroad tracks to north of them. Residence values are high, owing partly to the monopoly of fashion held by Peachtree Street, where values vary from $200 to $100. The better streets off Peachtree Street, such as West Peachtree, Forest Avenue, Ponce de Leon, North Avenue, etc., show values running from $80 to $40; the wide differences in values for similar land being due not only to topography but also to variations in the scale of


ELLIS
CHURCH
HOUSTON
JAMES
PRYOR
FORSYTH
PEACHTREE
LUCKIE
AUBURN Ave
IVY
POPLAR
EDGEWOOD Ave
WALTON
BROAD
MARIETTA
DECATUR
TRACKS
WALL
RR DEPOT
RAILROAD
ALABAMA
WAVERLY Pl.
HUNTER
MITCHELL
BROAD
FORSYTH
WHITEHALL
PRYOR
LOYD
BUSINESS SECTION
scale of feet
ATLANTA. GA.

development. Where large expenditures are made to improve a street by good pavements, sidewalks, parking, boulevarding,



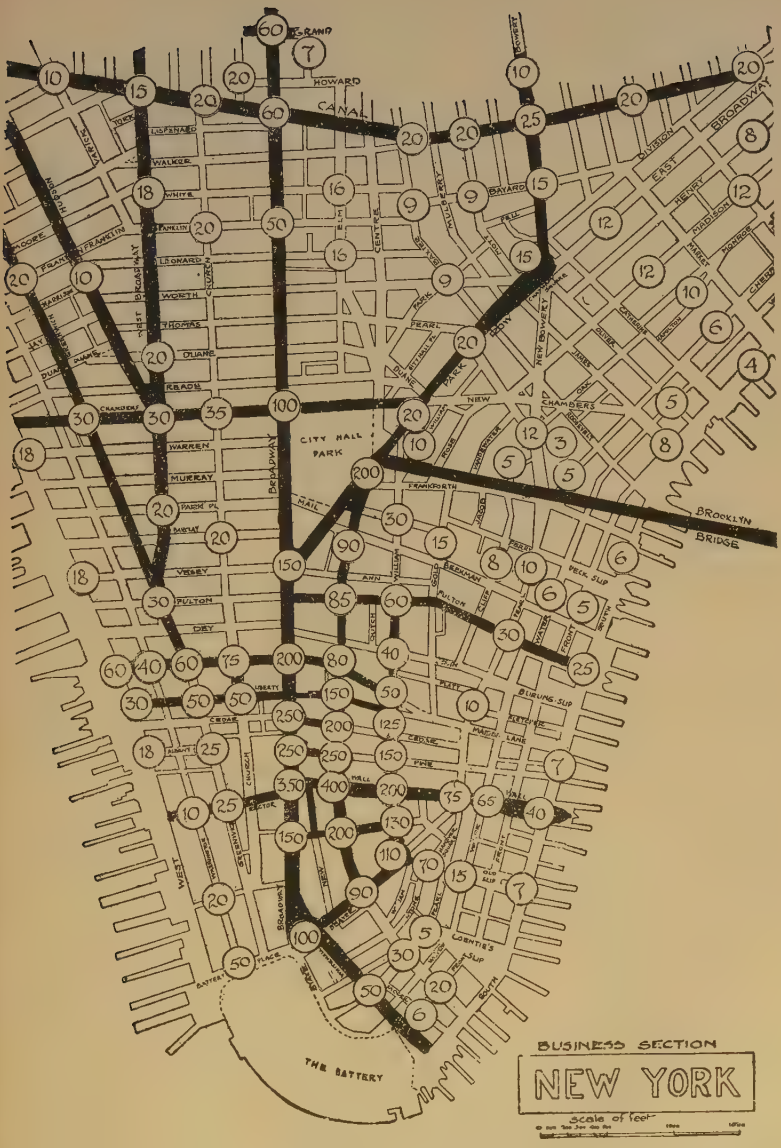
water, light, gas, etc., and by the erection of handsome houses protected by building restrictions, if such developments attract

a desirable class of purchasers who establish an attractive social neighborhood, the land will easily have double the value of adjoining land which has been allowed to develop itself. Owing to high land the Boulevard and Jackson Street district is desirable, the low land between being occupied by negroes. In Atlanta, as in all southern cities, the poorer locations are taken up by negroes, whose occupancy yields values as high as $10 or $12 per foot on account of the crowded utilization. The old residence district around the state capitol south of the railroad tracks has suffered from natural decay and the encroachment of business, the highest residence value on the south side being given at $70, although owners claim values of $100 to $150.

New York (population 3,437,202 and about 4,500,000 in the metropolitan district) exhibits almost all of the typical developments found in the smaller cities. Starting at the southern tip of Manhattan Island in 1612, and clustering for protection around the fort, the first line of growth was along Pearl Street, then the shore road to the Brooklyn Ferry, the attracting forces being the trade with Brooklyn and the better facilities for ships in the East river, where there was less ice than in the North river. Broadway, the beginning of the Boston road and the Albany turnpike, was first blocked at Chatham Street by the high hill and the Trinity Church ownership of the Anneke Jans tract, and turning east sought the narrowest point between Collect Pond and Lispenard Swamp, over which to throw the bridge which laid down the line of the Bowery. Later when Broadway was cut through to Union Square it competed with and finally overcame the Bowery. The various plats parallel to the East river and the North river indicate the additions from time to time made to the territory of the city. The influence of topography has been gradually overcome, ponds, swamps, and streams being filled in and hills leveled. As the city grew north, the best residences pushed steadily up Broadway from the Battery, where they started, to Madison Square, above which point Fifth Avenue has drawn them off, while business has continued on Broadway. Added to this movement of the best residences up Broadway, they have jumped from one to

another of the small parks throughout the city's area, as from St. John's Park to Washington Park, Stuyvesant Square, Union Square, Gramercy Park, Madison Square, Bryant Park, and finally Central Park. Meanwhile the best retail shops followed after the residences on Broadway (also in earlier days the Bowery), and branched off on such prominent side streets as 14th, 23d, 34th, and 42d, which drew business, first by their width, being laid out for business streets, then by the ferries at either end, and last by their many elevated stations. Washington Square, which, like Union Square, Madison Square, Bryant Park, etc., was formerly a potter's field, when converted into a park effectually blocked traffic on lower Fifth avenue and started the most fashionable residence street in New York. Fifth Avenue appears to have become established as the most fashionable street by a process of elimination, owing to the narrowness of the island, by which one or two blocks on the water front being spoiled for residences by docks and manufacturing, the territory east of Third Avenue and west of Sixth Avenue being also injured by the elevated roads which make dividing lines, and the territory immediately surrounding the Grand Central Depot and east of its lines being similarly unavailable, there remain only Fifth and Madison avenues with adjacent side streets for high-class residences, of which Fifth Avenue leading to Central Park, for the past fifty years the most fashionable drive, had the natural advantage. The continuous movement of fashionable residences on Fifth Avenue up the east side of the Park is quite normal, while the absence of residences on the south and west edges of the Park was first due to the high prices at which this land was held, which led to the erection of apartment houses. The upper west-side district has been created by the Riverside Drive improvement, but does not compete with the Fifth Avenue district, being injured by the break in the approach, the street-car transfers, and the disagreeable section around 59th Street west.

With fourteen north and south avenues, where there would have been fifty had New York blocks been equilaterals, and with the great disproportion between the latitudinal and longitudinal axes of the island, immense traffic has inevitably developed on


BUSINESS SECTION
NEW YORK
Scale of feet
CITY HALL PARK
THE BATTERY
BROOKLYN BRIDGE
BROADWAY
CANAL
HOWARD
GRAND
WALKER
WHITE
FRANKLIN
LEONARD
WORTH
THOMAS
DUANE
READE
WARREN
MURRAY
PARK PL
MURRAY
VESEY
FULTON
DEY
CEDAR
LIBERTY
PINE
WALL
BROAD
BROADWAY
NEW
CHAMBERS
PARK
PEARL
ROSE
DUANE
FRANKFORT
ANN
NASSAU
WILLIAM
PEARL
FRONT
WATER
SOUTH
EAST
BROADWAY
DIVISION
HENRY
MADISON
MONROE
MARKET
CHERRY
JEFFERSON
CENTRE
ELIZABETH
MULBERRY
MOTT
MULBERRY
BAYARD
ELDRIDGE
ORCHARD
ALLEN
ESSEX
CLINTON
WEST
WASHINGTON
GREENWICH
HUDSON
RIVERSIDE
BATTERY PLACE
STATE
WHITEHALL
BOWERY
NEW BOWERY
BOWERY
PEAK SUP
BURLING SUP
CORLEAR'S SUP
OLD SLIP
SLIP
SLIP

all of the avenues except Fifth Avenue and part of Madison, which lack transportation. This has led to the rapid northward movement of shops on all of these axial avenues, so that a considerable portion of the city consists of north-and-south business streets and east-and-west residence streets.

It appears quite probable that the greater part of the surface of Manhattan Island will be ultimately devoted to business solely, the space above the ground floor, if not utilized for business, being occupied by hotels, apartment houses, flats, and tenements. Probably the only exclusively residence occupancy will be in the most fashionable locations on and near Fifth Avenue and Central Park, where the very rich who desire to live in town can afford to hold their property against the encroachments of business. Even here restrictions running with the land may be necessary, the weakness of their position being that one shop injures an entire block, while one residence may have but little effect on a block of stores.

Brooklyn, on one side, and Jersey City and Newark on the other, have tended to check the northward movement of some forms of business, and it is quite to be expected that the general growth in all directions from Manhattan Island will create a shopping, hotel, and amusement center near the middle of the island, necessarily south of Central Park and probably between the termini of the new Pennsylvania and Long Island subways and the Grand Central station at 42d Street.

The banking district appears to include the most valuable land in the world, the financial section in London being the only competitor. The two corners of Wall Street and Broad Street were sold about thirty years ago at $350 per square foot, and $450 has been offered for the corner of Wall Street and Broadway, by contrast with which *The Statist* says that £62 (or $300) a square foot, including a fairly substantial building, is the highest price known in London. It is, however, very difficult to arrive at the highest values in the two cities, as the best property changes hands only at long intervals. The favorable factors creating high prices in the two cities would be for London a larger population, lower capitalization rates, and fair transportation by underground

RESIDENCE SECTION
NEW YORK
Scale of Feet
0 500 1000 2000 3000 4000 6000
HUDSON RIVER
CENTRAL
PARK
BLACKWELL'S
ISLAND
E. R.
EAST
RIVER
CANAL
110th
106th
86th
72nd
59th
42nd
34th
23rd
14th
12
3
4
15
5
25
16
8
40
20
60
70
10
80
30
90
75
12
7
65
6 to 7
6
5
7 to 10
10 to 3
3 to 7

railways, and in New York better transportation facilities, improved methods of building, freer building laws permitting a height of thirty stories by contrast with the London maximum of eight stories, the limited area and narrow shape of Manhattan Island, promoting greater concentration of population, and a more buoyant spirit with greater tendency to discount the future.

The average price of land in the financial district varies from $150 to $200 per square foot. Next in the scale comes the women's shopping district on Sixth Avenue from 14th to 23d streets, also on 23d, 34th, and 42d streets, and on Broadway from 9th to 23d streets, with an average scale of $60 to $100, and an occasional sale such as that at Sixth Avenue and 22d Street at $180 and the northwest corner of Broadway and 34th Street (having an area of less than 2000 square feet) at $350. The values on the other business streets might average as follows: 14th Street, north side, $35, south side, $60; 23d Street, north side, $65, south side, $120; 34th Street, $60; 42d Street, $70; Fourth Avenue, $20; Third Avenue, $9; Bowery, $15. The wholesale district on Broadway from Canal Street to Ninth Street varies from $30 to $60 per square foot, with the side streets from $20 down to $8. Residence values vary from $60, a fair average for Fifth Avenue above 42d Street, up to $75 for the very best locations facing the Park. The side streets just off Fifth Avenue from 34th to 70th streets vary from $40 to $30, and from 70th to 90th streets, from $30 to $20. The side streets from 59th to 70th, between Madison and Park avenues drop to $15 or $20 per square foot; from Park to Lexington avenues $10 per square foot; from Lexington to Third avenues about $5 per square foot. Land in the best residence district on the west side varies from $7 to $20 per square foot.

The persistent tenement occupancy of the lower east side is apparently due to the shape of Manhattan Island, the outward curve including territory away from transportation lines and hence not desired by business houses. Tenement districts wherever located average from $4 to $10 per square foot.

An approximate scale of normal values per front foot for cities of different sizes might be as follows, it being understood that

actual highest values in the various cities vary widely from any average scale, owing to the marked differences between these cities in wealth, character of industries and inhabitants, topography, transportation, platting, climate, etc.:

City Population	Best Business, per Front Foot		Best Residence, per Front Foot	
25,000	$300	$400	$25	$40
50,000	600	800	40	75
100,000	1,200	1,600	75	150
150,000	1,800	2,400	100	200
200,000	2,400	3,200	100	300
300,000	3,600	4,800	200	500
600,000	7,200	9,600	1500	2000
2,000,000	23,000	31,000	2000	3000
3,500,000	42,000	56,000	6000	9000

The above table for business values is based on the consideration that each thousand of population adds from $12 to $16 to the front-foot value of the best locations. Reference to the plats will show how this scale applies to the examples given, it being noted that the populations stated are for 1900, while these cities have grown and values have increased in the past two years, — and it being particularly noted that the figures apply to only two or three corners in each city, adjacent locations being worth possibly only half as much as the best.

To sum up: the economic rent of business locations represents a normal proportion of the profits of the shopkeeper, running from 20 per cent to 40 per cent, less operating expenses and interest on the capital in the building. The value of business land is limited by what the locations can earn, this being continually increased by new inventions and improvements, both in transportation and in building construction, as well as by increase in the population and wealth of cities.

The economic rent of residence land represents the normal proportion of income, varying from 15 per cent to 35 per cent, which various classes can afford to pay for house rent, less operating expenses and interest on the capital in the building. The increase in residence values comes from larger individual fortunes and more of them.

The broad movements of value are that value by proximity, responding to central growth, diminishes in proportion to

distance from the various centers, while value from accessibility, responding to axial growth, varies in proportion to transportation facilities which frequently carry high values to considerable distances from the main center through areas of low value. The principal causes of redistribution of values are changes in transportation facilities, such as new service, elevated or underground lines, new railroads, bridges, tunnels, ferries, and the more gradual readjusting force of the reaction of new utilities and new occupied areas, which brings harmony out of the complex contending factors. Present tendencies are entirely towards greatly increased values at strategic points, although the general run of values for the great mass of medium business and residence property changes slowly, since such property supplies the wants of a large number of people of moderate earning power who cannot pay beyond a certain price. Moreover there is but little speculation in such property, a more sober view being taken of its possibilities and it being realized that the repair and depreciation account is increasingly large as property sinks in grade. Ordinarily a gradual lifting of values for all classes of property occurs in proportion to the growth of the city with the exception of the decaying sections left behind in the onward march, where values fall steadily, sometimes to the point of extinction. The point of highest value, responding in scale and location to the growth of the city, moves onward from the first business center, the crest of the wave being usually about the middle of the shopping districts, frequently strengthened by exceptionally large and handsome buildings, and its movements checked by strong cross streets. Apart from any factors which might deflect the line of growth, the land lying in its path is quite certain to increase in value, the time of such increase, however, being difficult to gauge, while the land which it has left behind is quite certain to sink more or less rapidly in value. In the largest cities, apart from the onward movement of residences, retail and wholesale shops, a financial section with even higher values arises in the territory left behind, where the banks, trust companies, brokers, and office buildings cluster close to the original center.

CHAPTER XIX

SOME ASPECTS OF THE LABOR PROBLEM

1. The Policies of Labor Organizations[1]

The union has two general methods of improving the economic condition of its members. It may try to strengthen the strategic position of the individual workman in dealing with the employer, or it may take the function of bargaining altogether out of the hands of the individual. The former policy involves an attempt to diminish the number of competitors in the trade. The latter has no necessary reference to the number of individual workers, but involves the placing of the interests of all the workers under a single control, so that the whole amount of labor power available in the trade may be handled in the market as a unit.

The restriction of the number of competitors is undertaken chiefly through measures for diminishing the number of learners. It is to this end, at least in a great degree, that all the union regulations of apprenticeship, which are discussed below, are directed. For the same purpose, in trades which feel the competition of foreigners and in which at the same time the strength of the union is such as to promise effective control, restrictions are placed, by high union initiation fees or otherwise, upon the entrance of foreigners into the occupation.

Such regulations as these, however, play a relatively small part in the policy of the unions. That upon which they chiefly rely is unity of action. If the whole body of workers of a given kind can be brought into the union, so that the union can meet the employers as the representative of the whole, the position of the worker will be greatly strengthened. There will still remain the absolute perishability of his commodity, — the need

[1] Reprinted from the Report of the Industrial Commission, XIX, 806–827.

of selling his labor to-day under penalty of the total loss of to-day's portion. But he will be freed by the support of his fellows and of the union funds from the necessity of accepting whatever is offered, on pain of beggary. The fear that if he refuses to accept certain terms his neighbor will accept them will also be removed. His ignorance of market conditions will be partly remedied, both through the combination of the knowledge of all the members of the union, and, in some cases, by the broader outlook which the union officials, wholly or partly exempted from daily application to manual work, may be able to obtain. The whole matter of bargaining can be put into the hands of the most skillful; and the officers and leaders may develop a skill in bargaining, by constant practice, comparable to that of their opponents.

Unified action involves definite rules as to wages, hours, and other conditions of work. This alleged "tyranny," or interference with the "freedom" of the members, has often been considered one of the most objectionable features of the unions. There are, it is said, "honest men with wives and families to support who are willing to work for one and two dollars a day, but they can't get it. Why? Because their union or their trust won't allow them. The standard is set for them, and if they don't wait and starve their families until they can reach that standard they can't get work anywhere. Everywhere they go they are met by the same condition of affairs, all over our United States. A workingman can't work for what he wants to, — he must work for what somebody else says he must work for."

To the mind of the union man the fixing of minimum wages by the union does not seem to involve any diminution of his liberty. The union brings him a sense of greater liberty. When he dealt as an individual with his employer he had to accept regulations and rates of pay which he had little or no voice in determining. He was under an industrial authority which left him no freedom except the freedom to leave its jurisdiction. The union is a democratic government in which he has an equal voice with every other member. By its collective strength it is

able to exert some direct influence upon the conditions of employment. As a part of it, the individual workman feels that he has a voice in fixing the terms on which he works. He exchanges the sense of subjection to the employer for a certain sense of free action. This increase of freedom is, in fact, a result of organization which appeals most strongly to the minds of many workingmen, and which some of them mention among the things they prize the most.

The fixing of the terms of employment of considerable numbers of men by definite and general rules is not peculiar to labor organizations. It is a necessity of industry upon a large scale. The small employer may be able to make separate bargains with individual men ; but the large employer must, of necessity, classify his hands and fix their pay by rule. The mere setting up of such fixed rules is not, therefore, the essence of the complaint against the labor unions.

When wages are fixed by the piece the necessity of uniform rates is evident. A uniform price per piece will give a variable rate per day, depending on the efficiency of the workers. It is in regard to time wages that fault is found with the principle of the union rate. The unions try, say their opponents, to reduce all men to a common level ; and a common level is of necessity the level of the slowest and the dullest.

It is not uniformity of daily or weekly pay which unions really desire. The uniformity which they seek is equal pay for equal work. It is true that there is a widespread objection to the piecework system. Even unions whose members work under it do not always approve of it. But this is because it is felt to interfere with the real final purpose of the organization, — the maintenance and the increase of the rate of pay per unit of output. Uniformity of pay per unit, desirable as it is in itself, is chiefly important as a means of securing higher rates of pay. If, under the circumstances of a given trade, the rate per unit of output seems more effectively protected by the time system than by the piece-price system, the time system will be preferred ; and the uniformity of the rate per unit must be protected under it by such means as are available.

As a matter of fact no union forbids variations of time wages. The universal policy, where time wages are involved, is to fix a minimum. In most unions the fixed minimum is in practice the actual wage received by the large majority of the members; but the union leaders generally profess entire willingness that the employers pay more. Objection is sometimes made to special payment for mere speed, on the ground that such arrangements are intended to establish an abnormally fast pace, which may be made a standard for the whole. But for special skill, as shown in the quality of work, or in the ability to do particularly difficult jobs, extra payment is made not infrequently, and with the full approval of the union authorities.

It might seem to be possible for the union itself to fix grades of ability, with corresponding differences of wages, to which it might assign its several members; but the universal voice of the union world declares this to be impracticable. Such grading could not be effected without jealousies and heartburnings. In a purely voluntary and democratic organization, whose strength depends upon the loyalty of its members, it would not be safe to introduce a policy so heavy with causes of discord. On the other hand, to permit members to be assigned to different grades by the employers would be to revert to the individual bargain; and the tendency would be to reduce the greater part of the members to the lowest grade.

In a few exceptional cases the rigid enforcement of the minimum wage is waived. This is done oftenest for members whose hands have lost their cunning by reason of advancing years. Some unions give special consideration to the cases of such men, when they request it, and authorize them to accept special wage rates lower than the regular minimum. This is very rarely done, however, for any other reason than age. Men in their full strength must take their chances of finding employment at the rates that others get.

Time wage rates have been greatly increased by union action, but the increase of the rate per unit of product has been by no means so great. In two ways a comparatively stable relation is maintained between output and pay.

In the first place, as wages go up employers find that it does not pay them to keep any but the most efficient men. The weaker, the slower, the less skillful find their employment more and more precarious. They hang upon the outskirts of the trade, occupied when business is active, idle when it is dull. In the end they leave the occupation altogether, or leave the union and work at non-union jobs, or drift away to places where wages are smaller and the pace is slower.

In the second place, the pick of the men left by this process of selection increase their pace. They are led to do it partly by a sense of satisfied ambition in the wages they are getting, and partly by the fear that they may find themselves among the rejected. In such unions as those of the bricklayers of New York City, which have obtained a considerable increase of pay within ten or fifteen years, the men declare that the pace has been greatly quickened.

Apprenticeship

The entrance to a trade must necessarily be through a period of instruction and practice. In the old days the learner was legally bound to a master, by whose side he worked, from whom he received personal instruction in the craft, and in whose house he usually lodged and ate.

The growth of the great industry has done away with apprenticeship of the old type. There are no longer masters who can care for apprentices and give them personal instruction. The custom of legal indenturing has almost disappeared. It is a custom which the labor organizations, so far as their attitude can be judged from their formal expressions, look back to with unanimous longing. A surprising number of the unions even to this day have in their written constitutions expressions of desire that suitable laws for the indenturing of apprentices be enacted, and that the custom of indenturing be renewed and enforced.

The unions complain that under existing conditions it too often happens that trades are not taught or learned at all. A boy is set to feeding a machine, and feeds it day by day and

month after month. He is gradually advanced from simpler to more complicated operations. He remains, however, a tender of machines, and never becomes an artisan. The evil of this condition, from the standpoint of the union, is plain enough. The workman of former days spent years in acquiring a general and thorough knowledge of a craft. He is in danger of being replaced by a set of workmen, none of whom has passed through his training or has acquired such a skill as his, each of whom is only capable of tending a machine which has usurped a part of his work, but all of whom together threaten to make his skill industrially unnecessary and to deprive his training of its value. Machinery and the division of labor substitute low-grade for high-grade workmen. Though wages for the same grade of skill may be maintained, or may even rise, wages to the workmen actually engaged upon a given product tend, it is declared, to fall.

The unions, representing the interests of the workmen already engaged in the trades, could not fail, therefore, to desire the maintenance of a system of apprenticeship. Though apprenticeship enforced by law is beyond their reach, many of the stronger unions are able to maintain something like it, by their own power, within the spheres of industry which they control. Wherever it is possible the unions require that entrance to their crafts be through an apprenticeship of three, or four, or five years. They require also that the learner be not kept upon a single specialty, but that he be given a broad and thorough knowledge of the trade.

It is probable that the immediate interest of the unions leads them in this respect to combat in some degree the natural evolution of industry. It may be that they put greater restrictions upon the division of labor than the industrial interest of society requires. Though foremen and superintendents ought to have the most thorough and complete trade training which they can obtain, there seems to be a limit to the extent of knowledge which an ordinary workman can make direct economic use of. There is little demand for men who are capable of making a complete shoe. It is high skill and dexterity in some one minute part of shoemaking which is called for by modern conditions.

Something may, however, be said from the higher social standpoint in favor of the broader training which the unions try to insist on. It must be admitted that the man who has spent four years in acquiring a general knowledge of the machinist's trade in all its branches is likely to be a broader man and a better citizen of the republic than he who has simply pushed pieces of iron between the jaws of a machine. It is not altogether certain that the greatest possible exploitation of low-skilled labor gives the greatest possible production of material wealth. It is in a high degree doubtful whether such methods of production, pushed to the extreme, result in the highest social well-being.

There is another kind of apprenticeship rule which is subjected to more frequent and severer criticism. This is the restriction of the number of apprentices. It is a very common policy among unions which have strength enough to enforce it to forbid employers to take on more apprentices than a certain limited number, generally fixed in some definite proportion to the number of journeymen employed. The purpose of this policy is unquestionably to diminish the competition for employment, and so to make the employment of the present members more continuous and to keep their wages higher. But the partial exclusion of American youth from the skilled trades is felt by outsiders to be not only unjust to the individuals whose choice of an occupation is restricted, but in broader ways injurious to society. There necessarily results, it is argued, an increased overcrowding of the less skilled occupations, and of those in which no such artificial restrictions exist. The restriction of apprenticeship cannot be introduced except in trades in which the workmen have already obtained, through their skill and their organizations, a considerable strategic advantage, and presumably a relatively high rate of wages. A forcible exclusion of new recruits from such trades results in a forcible injection of an abnormal number of recruits into other occupations. These other occupations are presumably, upon the average, already more crowded, and subject to lower wage rates and to worse conditions. The artificial and abnormal increase

of recruits to them tends still further to lower their wages and their conditions of employment.

The arguments with which the unions support the restrictive policy are based in part upon the same considerations of the desirability of thorough instruction in a trade which have already been referred to. It is declared that, if the hiring of boys is absolutely free, the less scrupulous employers get boys to do a large part of their work. Such employment does not amount to an apprenticeship. It is not meant, even in a subordinate degree, to teach a trade. The purpose of it is to get work done at the lowest possible rate. A boy is kept as long as he will consent to work cheaply. When he begins to set a value upon himself he is discharged and a new cheap boy is hired. Meantime the first has been taught no trade. He has simply learned a few simple movements. He began his work as an unskilled laborer, and he is still an unskilled laborer when he ends it. Such practice as he has obtained will be of trifling value to him, except in the improbable case of his getting new employment almost exactly similar. The restriction of the number of apprentices is a part of the same consistent policy, says the unionist, as the requirement of an apprenticeship of a fixed length. It is essential to the acquirement by the youth of an adequate knowledge of the trade in which he is engaged.

The hiring of an excessive number of boys, it is maintained, results in inferior work, and so in injury to the public. But, worse than that, it gives us idle men as well as busy children. The natural breadwinners walk the streets, while boys who should be in school take their places at the bench and the machine. The employers who are willing to follow such a policy are able, by means of their unfairly cheap labor, to underbid their competitors, and force them out of business, or compel them to adopt the same injurious tactics.

Common as it is to make rules limiting the number of apprentices, there is some question how much effect such rules produce on actual conditions. The new recruits to most trades seem to come chiefly, it is true, from places where the trades are not organized, or where their organizations are weak. The union printing

offices of the great cities draw their recruits from the country offices. The ranks of the city carpenters are filled to a very great extent with men of country training. But one may recognize this fact and may still doubt whether the limitation of the number of apprentices restricts, in a marked degree, the entrance to most trades of young persons who desire to follow them.

In the first place, this phenomenon is not confined to organized trades. The most of the bank clerks of New York City, as well as of the printers and the carpenters, are men of country training. In the second place, the restrictions of the unions are sometimes ineffective, because unnecessary. At least one witness, an employer, stated before the Industrial Commission that the unions in his trade and in his town, though they strenuously insisted upon a formal limitation of the number of apprentices, fixed so high a limit that the masters had not cared to take as many apprentices as the union rules allowed.

The disappearance of apprentices seems to be caused, in a large proportion of cases, by the indisposition of the masters themselves to take apprentices, which is illustrated by the statement just referred to. That indisposition may itself be due in part to union regulations, but to regulations other than the restriction of numbers. The greatest influence is perhaps exerted by the insistence of the unions upon the comprehensive teaching of a trade. Industry on a great scale is based upon division of labor, and division of labor means specialization. As is noted above, the natural tendency of the employer is to keep his boy employees within narrow lines of work, in order that they may quickly attain such skill as will bring him a profit. The union prohibits this. It insists upon thorough and broad instruction in the craft. It is this, in a great degree, which makes it not worth while to employ apprentices.

While insistence upon the teaching of the whole trade diminishes the value of apprentices, the union also raises the cost of them. It fixes a scale of wages for them as well as for other employees. The scale is, of course, far lower than that for journeymen ; yet it may sometimes prevent employers from taking apprentices, when they would take them, notwithstanding

the necessity of giving them general instruction in the trade, if they could pay them less.

As is noted elsewhere, the increasing difficulty of giving thorough industrial training in the shops has led to an increasing demand for industrial schools. Such schools in many cases offer only a general training, without pretending actually to teach trades. The school teaching of trades seems to be against the direct interest of the actual members of the unions in two ways. It will increase the number of workmen in their crafts, and so will increase the competition for employment, and will tend to make wages lower and employment less constant. Besides this, the school-trained boys will be removed, during the formative period, from the union atmosphere. They are likely to acquire a set of opinions and feelings different from those of the shop, and to be less readily brought to the union point of view. The unionist may naturally fear that the technical schools will produce a crop of non-union workmen, and will make united action for the betterment of the condition of the workers less practicable. Yet the organized workmen, at least in some instances, seem to appreciate the social value of training of this kind, and to be ready to do what they can to promote it. The agreements between the masons of Boston and their employers provide that both parties shall join in an effort to establish an institution in Boston, in which all the trades shall be systematically taught, and that when such a school is established they will unite in the oversight and care of it, and will provide in their rules for a reasonable deduction from the term of an apprentice, for instruction received there.

Attitude of Labor Organizations toward Non-union Men

The strength of a trade union depends on its comprehensiveness. From the nature of the case it must desire to embrace all the workmen of its craft. Such universality is not in itself a thing which any one has a right to object to. The courts have, however, frequently questioned the propriety of the methods by which unions sometimes try to promote their comprehensiveness.

The method which is chiefly condemned is the exclusion of non-union men from employment. This may be effected by established custom or by formal agreement with employers; but the ultimate foundation on which the enforcement of it rests is always the refusal of the members of the unions to work with non-union men of their trades. Sometimes, to help other unions, the refusal is extended to non-union men of other trades, and occasionally to work upon material prepared by non-union men.

Many motives may lead a man to keep out of the union. He may have conscientious scruples against the organization as such, or against some of its methods. He may be of an independent temper, and his spirit may rebel at the notion of permitting his economic conduct to be determined by the will of a majority. He may wholly fail to assent to that notion of trade and class solidarity which lies at the bottom of all effective labor organization. He may have had personal quarrels with some of the members. He may simply think it not worth his while to pay the dues. A free American citizen is entitled to shape his course by any of these considerations. To force him, having such opinions and desires, to act contrary to them, seems at first thought a violation of the fundamental principles of natural liberty.

A strike because of the employment of non-union men is felt by many to be an attack, not only on the right of the employer to manage his own affairs, but also on the right of the non-union men to earn a living for themselves and their families in such a way and on such terms as are satisfactory to them. It seems to be a violation of the principle of equal rights for all men. The members of the unions, it is said, arrogate exclusive privileges to themselves and deny equal rights to others. A labor union is a trust, whose aggressive conduct leaves its members no excuse for complaint of any trust or association of capitalists.

The practice of attempting to procure the discharge or prevent the employment of non-union men has been brought before the American courts in numerous cases in recent years. In most instances the court decisions have held that such action, especially where it seeks to bring about the discharge of those already in employment, is unlawful, either civilly or criminally. It has

even been held by the court of appeals of New York that it is an unlawful conspiracy to procure the discharge of employees in pursuance of a written agreement between the employer and the union that only union men shall be employed.[1] The courts usually take the position that such action on the part of the unions is an interference with the liberty both of the employer and of the workingman. It is argued that every employer has the right to hire whom he will, and that workingmen have the right to enter any lawful employment. To compel a man to join a labor organization against his will is also considered to be illegitimate coercion.

The highest English judicial authority, the House of Lords, has recently held, in the famous case of *Allen* v. *Flood*, that workingmen have the right to refuse to labor with others to whom they object, or, indeed, to refuse to labor on any ground which seems to them proper. The question whether such action toward obnoxious employees was ethically justifiable, or whether it was desirable from the standpoint of the general public welfare, was not discussed; but the court held that the motive of the workingmen in their action was not to be considered in determining its legality. Several American courts have very recently followed this English decision.[2] The legal right of workingmen to refuse to labor with others, as well as the ethical and economic justification of such action, is still an open question, as to which marked differences of opinion exist.

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The attempt of labor organizations to make their membership as comprehensive as possible is materially different in character from the attempt, less frequently made, to exclude persons altogether from the trade. If the union is willing to receive any competent person into its ranks, no man can complain of being absolutely deprived of work because union men refuse to work with him so long as he fails to join the organization. When,

[1] *Curran* v. *Galen*, 46 N. E. Rep., 297, 298.

[2] *Reform Labor Club* v. *Connaughton*, *Bulletin of New York Bureau of Labor Statistics*, June, 1900, p. 159; *National Protective Association* v. *Cumming*, 53 App. Div., 227, 231, 232.

however, a union has established a substantial control of its special kind of labor, the temptation arises to restrict the number of members. This is occasionally done by an absolute refusal to receive new candidates.[1] Such action is, however, rare ; the forms in which this tendency more commonly appears are restriction on apprenticeship and high initiation fees.

Limitation of Output

The workman sells his labor for certain days or certain hours. The natural desire of the buyer is to get the greatest possible economic effect. The seller desires to give the least possible exertion.

That the tendency of workingmen is to restrict the output of their labor within more or less definite limits, which they have come to consider right and just, is undeniable. It has often been asserted that the effective force of this tendency varies with the efficiency of labor organization. The trade unions of Great Britain, for instance, have always been relatively stronger than those of America, and at the same time the tendency to fix definite limitations to the performance of each workman has been stronger there. One standard contrast between industrial conditions in Great Britain and in the United States is the greater freedom of the American workman from restrictive rules. To it is often attributed, in a large degree, his greater activity and effectiveness. The alleged decline of British industry is often laid at the door of the unions, by reason of their limitation of the product of their members.

It is true that the limitation of output is not effected by means of definite rules except where labor organizations exist. It is only through some sort of organization that such rules could be established ; but such rules, when unions frame them, only put into definite form desires and tendencies which have previously existed. They may be only the expression of old traditions of

[1] For instance, the stonecutters' union of Newark, New Jersey, resolved in May, 1889, to admit no more members for one year. Reports of the Industrial Commission, XVII, 571. For exclusion of particular men, see VII, 702.

the trade. The non-union machinist is almost as strenuous as the unionist against the running of two machines by one man.

The ground on which workingmen oftenest defend the restriction of output is the need of protecting themselves from excessive and injurious exertion. The stress and strain of work at high tension is declared in some trades to have reached a point which noticeably shortens the working life of the men. This is the complaint of the flint-glass bottle blowers, who formerly had a strict limitation of output, but gave it up some years ago. They are piece workers, and the spur is the desire of each man to get the highest possible daily wage. The skilled workmen in the steel mills are also piece workers. In the rolling of black plate for tinning the daily output of 30-gauge per man in 1893 and 1894 is said to have been about 3600 to 3900 pounds. The union has a limit for the day's work; but it was raised successively to 5250 and to 5750 pounds, and the president of the union testified in 1899 that he was satisfied that some men were making, "illegitimately," as much as 7500 pounds in the eight-hour day. . . .

Under a time-wage system the spur to overexertion comes directly from the masters. Aside from direct and brutal driving, which is sometimes charged, the workmen point out various devices by which, as they allege, employers try to get increased amounts of work: the hiring of especially capable men by extra payment to set a pace which others can be directly compelled to follow, if anything like team work is involved, or which can be held up as an example that they must copy; in some sorts of machine work, the speeding up of the machinery; in others, increase in the size of the machines; in others again, the setting of one worker to tend two or more machines.

On the employers' side it is denied that the increase of the size of machines, or of their speed, or the placing of two or more under the charge of one person, necessarily involves an increase of exertion. It is pointed out that these changes are the direct result of the more perfect and more automatic working of the machines, and of the less attention which they consequently require. It is the unanimous assertion of the workmen, however,

that these changes taken together do involve an increase of strain. The physical exertion may be no greater, or may even be less ; but, it is declared, the strain upon the attention is such as to involve increased exhaustion at the end of the day, and a shortening of a man's working life.

It should be remembered that a man's industrial life may be shortened, not only by hastening his absolute deterioration, but also by raising the standard of efficiency. As the pace increases the number of men that can maintain it diminishes. Men a little past the prime of life, who would be able for years yet to do effective work, find themselves forced out of the industrial field because they are no longer capable of the intense application and the rapidity of movement which existing standards require.

The workingmen not infrequently allege as an additional argument against too great rapidity that it is incompatible with excellence of work. A personal motive which unquestionably plays its part at times, though it may not often be avowed, is the desire to "nurse a job," — to make one's employment last.

It may be that broader economic ideas have the greatest real influence in determining the limitation of work. These ideas have as their center the desire to maintain and to increase wages. There are several ways in which the limitation is thought by some workmen to contribute to this result.

In the first place, restriction is conceived to be necessary to prevent a direct lowering of the standard rate of pay. The standard rate, whatever terms may be used in stating it, means at bottom so much pay for so much output. To permit individuals to give for any certain payment a larger product than the standard current in the trade is to revert at once to the individual bargain. It makes no difference whether the individual competition is introduced through cutting the price of a day's work or through increasing the amount of it. The one process as well as the other destroys the effectiveness of the union rate, and will end by compelling each worker to deal with the employer as best he may in his individual weakness.

If a few individuals increase their speed, their pace tends, it is declared, to become the standard pace in the trade. If the work is

by the day, there is no tendency to a corresponding increase of wages. The workmen assert that the case is nearly the same, in the long run, if the work is by the piece. Under piece rates there is, of course, an increase of daily wages at first, if the pace is increased. But every employer has in his mind a more or less definite standard of just wages for each kind of service. If the piece workers begin to earn more than he considers fair, he will cut down the piece prices. In the end the men will work harder than before, and will get no more for it. Here, therefore, as well as under the day-wage system, the standard rate is best maintained, the workmen think, by keeping within certain standard limits of performance.

In a less direct way the limitation of output is conceived to affect wages by providing work for the unemployed. The competition of the unemployed is the great obstacle in the way of raising wages. If work can be found for them, jobs may be made to hunt men instead of men hunting jobs. If those who are employed work excessively, it is claimed, they selfishly take to themselves work which ought to be left for the less fortunate. To state the case in the converse form, if the output of those who are employed is restricted, room may be made for all who want employment. This is a proposal of kindness and charity; but it is also a proposal of good policy for those who are already at work. If the masters knew that there were no idle hands to take the place of those they have, they would be anxious to keep their men, and the men rather than the employers would be the dictators of wages. The aggregate share of the product which goes to the wage workers would be increased at the expense of the share which goes to other classes.

Another economic argument is based upon the idea of overproduction. It is because more goods are made than can be bought by people who want to buy them, it is argued, that the mills have to stop working, and widespread industrial depression occurs. So far as restriction of individual output would increase the aggregate share of the wage-earners in the social product, it would modify the tendency to industrial depression by increasing consumption; for almost all which the wage-earners are able

to get is immediately consumed. But beyond that overproduction would be directly diminished by so much as each individual worker should diminish his own product.

There is yet another form of economic argument, which seems to be especially prominent in Great Britain, and which doubtless affects in a less degree the policy of some American unions. In it labor is conceived as a commodity offered in the market like other commodities. Whatever increases the supply tends to lower the price. But if four men do each a fourth more work than has been customary in the occupation, the effect is exactly the same, it is argued, as if the labor of a new man were thrown upon the market. The market value of each unit of labor will be lowered. Employment will be harder to get and less regular.

So far as restriction of product is designed to avoid excessive strain and to preserve the health and strength of the workers, the object is legitimate, and the method might be sanctioned if there were no better; but the same end may be attained in another way, which is more advantageous to the worker himself and which offers less ground for condemnation. Deliberate slackening of activity seems directly contrary to the principles of industry, and it alienates the sympathy of every one outside the wage-earning class. Diminution of working hours brings as great physical relief to the worker, and it offers social advantages which men of every class can appreciate. The enjoyment of home, the opportunity for intellectual cultivation, the possibility of stimulating new and higher desires, — these things are visible to all and approved by all.

Efforts on the part of employers to restrict output in order to enhance prices are by no means uncommon, although, like similar efforts on the part of workingmen, they are usually disapproved by economists and by the general public. There can be little doubt that in the long run the interests of all classes will best be promoted by making the aggregate production of wealth as great as possible, so long as the workmen are not crowded beyond their strength. Certainly any general attempt to reduce the efficiency of American labor will check the progress

of our industries, and will hamper us in competition with the other great producing nations. The high productivity of our industries at the present time is in part due to the superior methods and machinery used, but also in no small degree to the greater energy and skill of the American laborer. That high degree of energy and skill is the cause, at least in part, of the higher wages which American workingmen usually receive.

Attitude of Labor Organizations toward Labor-saving Improvements.

Ever since the era of machine industry began, many, perhaps most, workmen, organized and unorganized alike, have looked at every labor-saving improvement with dislike. In the early days workingmen frequently broke the machines and drove away the inventors and the users. Later, labor organizations in many instances devised rules to shut out machinery when they could, or to diminish its efficiency when they could not shut it out. The experience of a hundred years has shown that machinery cannot be kept out, and that its introduction can be little, if at all, retarded by such efforts of workingmen. Actual attempts to keep it out have therefore almost ceased, and rules tending to limit the efficiency of improved machinery are rarely found. Such rules regarding the limitation of output as do exist originate mostly in some other purpose than that of hampering the course of invention. Nevertheless the old feeling against improved machinery still exists among a large proportion of the working class, and manifests itself whenever there is a chance for it. The phenomenon is not characteristic of trade unions, but rather of the entire working class.

That improvements in machinery and means of production have been ultimately advantageous to workingmen, as well as to all other classes of society, is a proposition which scarcely requires argument. The immensely rapid improvement in the means of production during the past century meant an immense increase in the available product for distribution. Whatever may be thought as to the equality of the division of this increased

product between different classes of society, there is no doubt that the absolute income of the working class has been greatly increased through inventions and improved methods. The most intelligent working people usually recognize this fact. They realize that improved methods tend to reduce the cost of products, and to make them more accessible to workingmen as well as to other consumers. It is also recognized, further, that in many instances the reduction in the price of the product leads to such an increase of demand for it as ultimately to permit the employment of as many persons in the trade as were required before.

Even when there is a recognition among workingmen of the ultimate advantages of labor-saving machinery, their hostile attitude toward the machine is not always abandoned. The key to this puzzle lies in the difference between the "long run" and the "short run." The ultimate effects of an industrial change upon a trade as a whole are one thing; the effects upon the individuals who are working at the trade when the change comes are quite another. The linotype may so cheapen printing as ultimately to increase, or at least not to diminish, the number of printers employed; but if a fourth of the compositors are thrown out of work when the linotype is introduced, they must find means to live while the ultimate result is working itself out.

In two ways the machine may throw the workman out. It may so far "save" or replace the labor of men that less persons will be employed in the industry; or it may save skill, and enable cheaper and less skilled hands to displace the more skillful and expensive. In cotton spinning the ring frame, worked by women, is crowding out the mule with its high-skilled male spinners; and in the machine-building trade itself, many operations which formerly required trained mechanics can now be performed by automatic machines with the help of laborers of relatively slight and narrow skill. Similar results have been referred to in testimony before the Industrial Commission in wagon manufacture, glass blowing, stonecutting, and iron founding.

Even if the high-grade workman retains his employment, he is likely to find himself subjected to a loss. His skill, at the

best, is deprived of some of its value, perhaps a large part, by the introduction of the machine. The hand compositor has a fund of knowledge which will help him if he gets a place at the linotype, but the dexterity of his fingers loses its market value. The hand shoemaker, when his trade began to be supplanted by factory work, had a certain superiority over persons unconnected with the trade if he went into the factory; but he would not have in the factory anything like the advantage which years of apprenticeship and practice had given him in his handicraft.

These considerations, which have often received too little recognition from persons outside the wage-earning class, have always been instinctively recognized, if they have not been clearly formulated, by the wage-earners themselves. The interest of the man who sees a machine invading his craft and threatening to rob him of the opportunity to sell his skill is little affected by the results which the introduction of the machine may exert twenty years hence upon society, upon his trade, or even upon his children. He is concerned with getting bread and shelter to-day and to-morrow.

Leaving aside the cases in which the introduction of new machinery or methods results in an absolute lowering of the condition of the workers in an industry, it is the instinctive and universal feeling of employers, until they have been educated by a long course of controversy, that the workmen ought to be satisfied if they receive the same daily or weekly wage as before. The whole benefit of the increased production, it is assumed, ought to go to the employers, until competition compels the sharing of it among consumers by means of lower prices. The employers are not even ready to take account of any increased strain or increased intensity of work which the machine may call for. The workmen, on the other hand, are likely to assume with equal confidence that the machinery ought not to cause any reduction of the total cost of each unit of product; that is, they assume that the wages paid for the production of each unit ought to be the same as before, less only such an allowance as will compensate the employer for the maintenance of the machinery and for the interest on its cost.

Neither of these assumptions seems capable of being reasonably maintained. A considerable share of the gain ought to go in the first instance to the employer. If he got none, he would have no incentive to introduce the improvements; and so far as competition is really free, the share which he gets will presently cease to remain in his hands, and will thereafter be divided among the consumers. This result will give the widest possible diffusion of the benefits of the improvement; and the attainment of it, at least with regard to some considerable part of the increase of productive power, may be assumed to give the greatest possible social gain.

But this is not to say that the interests of society will be best promoted by throwing the whole gain, first into the hands of the employers, and afterwards into those of the consumers. It is not to say that such a result would serve the ends of justice.

So far as any notion of justice, as applied to rates of wages, can be formulated, it would seem at least to involve the requirement that any increased strain be compensated by increased pay. While the course of improvement tends to narrow the range of necessary skill, and in some cases makes it possible to introduce a lower grade of workers, it often aggravates the actual intensity and strain of the work. There may be an actual increase of physical exertion. The undercutting machines, which are being so rapidly introduced in the bituminous coal mines, have to be held steady by the miner, partly by the strength of his arm and partly by the weight of his body. To hold one of them is said to be far more exhausting than to handle the pick, because of their violent and incessant jar. In general, however, the strain which machinery imposes is the strain of constant, unswerving, and monotonous attention. With every improvement of the mule and the power loom the worker has taken charge of more spindles and more shuttles, and the speed has been increased; and the unanimous assertion of the workmen is that the change has progressively increased the demands of the work. The hand shoemaker, turning from one operation to another as his work progressed, and varying his task with sundry necessary preparations, had a less exhausting day than the shoe-factory operative.

The clothing maker, who sits week after week and sews a single seam on each of an endless succession of coats, leads a more nerve-wearing life than the tailor who makes a complete garment. Every such change, by which the physical or the nervous strain of labor is increased, ought, it should seem, to be accompanied with an increase of time wages.

From the social standpoint justice might also seem to require compensation for the destruction of the value of special skill. When a man has devoted years to the acquirement of an ability, he may be excused for feeling that he has a vested right in his income from the use of it. This feeling, indeed, is at the bottom of the machine breaking and the other less violent means by which men have undertaken to maintain their hold on work which they have felt belonged to them.

Without acknowledging the validity of this idea, may it not be admitted that a disappointment of the reasonable expectations on which the actions of men have been based is always a social misfortune? It is not a wrong, unless either government or particular men can be held responsible both for the expectations and for the disappointment of them. Yet any means by which such disappointment can be minimized — in the present case, any means by which, without checking technical progress, the hardships which progress involves can be made less severe — must be regarded as accordant with the true interests of society.

Finally, the wage-earners are the class of society whose economic position is weakest. This fact alone might justify the opinion that whatever strengthens their economic position is, so far, likely to increase the aggregate strength and to promote the aggregate well-being of society.

Waiving any possible question of changes in laws and social arrangements, by which it might be attempted either to exempt labor from bargain and sale in the market or essentially to alter the market conditions, the only way in which the workmen in a particular trade can, by their own action, avoid the immediate hardship that results from improvement of machinery and methods in their own craft seems to be by united action, taken through some such organization as a trade union. It is believed

to be impossible to point out any instance in which unorganized workmen have received any immediate and visible benefit from the introduction of new machinery in their trade. Any number of instances might be pointed out in which they have suffered immediate and visible damage. It has been shown to be possible, however, by wise and united action, to secure a portion of the benefits of machinery for the workmen immediately concerned, while leaving other portions to be divided between the employer and society in general.

Granting the actual introduction of machinery, two main lines of policy in meeting it are open to workingmen and their organizations. The possessors of the skill which the older processes require may undertake to maintain the old processes in competition with the new by reducing their rate of pay. This is the course which is likely to be adopted by unorganized and uninstructed workers. It is the course which was followed by the hand weavers of England early in the nineteenth century, and their miserable decay furnishes the classical example of the folly of it. They undertook by lengthening their hours and increasing their speed to compete in price with the products of the power loom. As the power loom was progressively improved, the quality of its products rose and the prices of them fell. As the haste of production on the hand loom increased, the quality of its products deteriorated. They lost the individuality and the excellence of construction and finish which had at first given them a superiority of value. The final result was the extinction of hand weaving, after years of hopeless and squalid struggle by the weavers.

The other policy is one which is not practically possible unless the workers act together in some form of organization, nor unless they take from the beginning a far-sighted view of their true interests. It is one which has been adopted by the printers in the United States and the hand shoemakers in Great Britain. The British shoemakers, the Amalgamated Society of Cordwainers, when shoemaking machinery began to be introduced, steadily refused to lower their prices for hand work, but took into their society all who were employed in the new factories, and advised their old members, so far as they could not

get employment at hand work at the old rates, to take work in the factories at whatever they could get. Organizing the factory workers, they helped in the establishment of new standard rates for them; they maintained their own standard rates, and even increased them; and, by turning their attention to the production of the most perfect goods, they have kept a place for themselves in the industrial world, and have not only suffered no loss from the competition of machinery, but have progressively increased their skill, and, along with their skill, their wages.

In this case it ultimately seemed best to let the new machine workers form a union of their own, separate from that of the old handicraftsmen. The latter union maintains itself as a small and compact body of highly skilled workmen. In the most conspicuous example of an analogous policy and an analogous success in the United States, the old hand workmen and the new machine men have continued in the same organization, but with results not less successful. The case is that of the International Typographical Union. When the typesetting machines began seriously to threaten the hand compositors early in the last decade of the nineteenth century, the union adopted the policy of avoiding any opposition to the introduction of machines, and demanding that they be run by union men and under wage scales and conditions of labor fixed by the union. The machines displaced, for the time being, a considerable number of compositors; but many more would have been displaced if the unions, by fighting the machines, had compelled the manning of them with non-unionists. In that case it is probable that comparatively cheap hands would have been employed, and that low rates of wages for them and a long workday would have been established; that the wages of hand compositors, struggling to compete with the machines, would have been lowered, and their hours of labor would have been increased. The actual policy of the union has resulted in the maintenance of the wages of hand compositors, in a gradual lessening of their hours, and in the maintenance for machine operators of even higher wages, on the average, and less hours than those of the hand printers. More printers are now employed than ever before.

2. The Knights of Labor and the American Federation of Labor.[1]

Prior to the Civil War national trade unions in the United States multiplied without any corresponding success in the formation of enduring alliances among them. Labor federations, when they existed, were local in character. Thus the General Trades Union of the City of New York, organized in 1833, was a federation composed of the trade unions of that city.[2] On January 8, 1834, the General Trades Union of Boston was organized upon the same general lines as the New York federation, and shortly thereafter similar organizations came into existence in Philadelphia and Baltimore. In 1866 certain representatives of organized labor assembled at Baltimore and formed the National Labor Union, with the establishment of the eight-hour working day as its chief aim. In 1867 and again in 1868 this organization held conventions and displayed considerable vigor; but active participation in the national campaign of 1872 created internal dissensions, and the union soon ceased to exercise any large influence. A convention including representatives from several national and international unions met in Cleveland, July 15, 1873, for the purpose of starting a movement for a national federation similar in scope to the National Labor Union. Though a declaration of principles and a constitution were adopted, the Industrial Brotherhood, as the new federation was called, possessed little vitality and soon disbanded.

In the general industrial depression of the early seventies, union after union was forced to disband. The system of low dues and slight benefits, now universally condemned as a trade-union policy, was then general, and hard times found the labor forces unprepared for the emergency. With industrial revival the labor world again moved towards organization. The experiences of the unions during the depression suggested the need of a strong

[1] By William Kirk. Reprinted, by consent of the author, editor, and publisher, from Studies in American Trade Unionism, pp. 353–380, edited by J. H. Hollander. Copyright, 1906, by Henry Holt and Company.

[2] Ely, The Labor Movement in America, pp. 43–44 [New York, 1890]; Burke, Central Labor Unions, in *Columbia University Studies*, XII, 28–30.

inter-trade alliance supplementary to the local and national trade unions then existing, and the order of the Knights of Labor undertook to supply this need. This organization, the first successful national federation of labor in the United States, had its genesis in a local union or "assembly" of garment cutters, formed in Philadelphia in 1869. With increase in the number of local assemblies a desire arose for a body which should represent all the local unions in a certain district. Delegates were sent to a common meeting place and a "district assembly," designated thereafter as District Assembly No. 1, was organized to further the interests of the local assemblies under its jurisdiction. This plan proving successful, other district assemblies were formed whenever the number of local assemblies in a new field justified a federation.

On August 2, 1877, a circular from District Assembly No. 1 was sent to all officers and members of the Knights of Labor, notifying them of a convention to be held in Reading, Pennsylvania, on January 1, 1878, for the purpose of forming a "general assembly," and establishing a central resistance fund, a bureau of statistics, and a system of revenue to aid in the work of organization. In response to the call thirty-two delegates assembled, formed a representative organization with a strongly centralized control, and after deliberation adopted as the name of the body so constituted, "General Assembly of the Knights of Labor of North America."[1] In the next three years, the Knights of Labor — although in full accord with the ideals of the general labor movement — developed along lines unmistakably opposed to the traditional principle of trade unionism, viz. trade autonomy. It placed in the hands of the General Assembly "full and final jurisdiction in all matters pertaining to the local and district assemblies."[2] The district assembly in turn possessed power within its district "to decide all appeals and settle all controversies within or between local assemblies."

The Federation of Organized Trades and Labor Unions of the United States and Canada was formed in 1881. The

[1] *Proceedings of the Knights of Labor Convention, 1878*, p. 3 [n. p., n. d.].
[2] *Constitution of the General Assembly, 1878*, Article 1, sect. 2.

Federation was planned as a labor confederacy which might admit local assemblies of the Knights of Labor on an equality with trade unions. The call for the first convention held in Pittsburg, 1881, read in part: "We have numberless trades unions, trades' assemblies or councils, Knights of Labor and various other local, national, and international labor unions. But great as has been the work done by these bodies, there is vastly more that can be done by a combination of all these organizations in a federation of trades." In adopting the name "Federation of Organized Trades and Labor Unions" the representatives to the congress made a direct concession to the same end. In the first congress of the new federation the local assembly of the Knights of Labor and the trade union were both represented, and it was understood that each should maintain its own organization and work in harmony with the other for the federation of all labor units.[1] But when the respective positions of the two federations became more sharply defined, radical differences appeared. In principle there was no inherent antagonism, since the work of one might very well have supplemented that of the other, but in practice disagreements constantly arose.

The two organizations differed much in government and structure. The first local assembly of the Knights organized in 1869 consisted originally of garment workers. A few months later, October 20, 1870, the first person not a garment cutter was initiated into the order, and thenceforth the unit in the federation changed from a trade union in the strict sense, to a new type, the "mixed assembly," having as its primary concern the interests common to all productive workers, and not the interests of a craft. The "mixed" assembly sought to gather into one association all branches of honorable toil, without regard to nationality, sex, creed, or color.[2] This principle guided the organizers[3] in their field work, and was largely responsible for the remarkable growth of the order in the next few years.

[1] *Report of the First Annual Session of the Federation of Organized Trades and Labor Unions, 1881*, pp. 8–10 [Cincinnati, 1882].

[2] *Constitution for Local Assemblies of the Knights of Labor, 1884.*

[3] *Constitution of the General Assembly, 1879*, Article 2, sect. 1.

On the other hand, the primary unit in the system of organization upheld by the Federation of Labor was the local trade union, composed of artisans following a single vocation, and attached to a national trade union. An exception occurred in the case of locals directly affiliated with the Federation, but this class formed a minor division and need not seriously qualify the main statement. In his report to the convention of 1900 the president said, "The formation of one local union placed under its proper jurisdiction, is of greater consequence and importance to the safety and progress of the labor movement than the issuance of twenty charters for local unions to be affiliated directly with the American Federation of Labor." The founders of the federation accepted the abstract principle of a common labor cause advanced by the Knights, but held that the mechanism through which the interest of all could best be promoted was the craft union. The opponents of the autonomous system claimed that the trade union seeks exclusive privileges in its particular field at the expense of those engaged in other branches of industry. Although these differences marked in general the broad distinction between the two federations, in special cases they faded away. For instance, it was common to find a local assembly of the Knights of Labor composed exclusively of workmen of one trade wherever conditions were unfavorable to the mixed assembly. Similarly the organizers of the American Federation often found it necessary to form into one local union workers of miscellaneous crafts. "Federal Labor Unions," analogous in composition to the mixed assemblies of the Knights, were organized in those localities where numbers did not justify the existence of trade unions. As soon, however, as a sufficient number belonging to one craft was gathered together, a new local trade union recruited from the membership of the mixed union was formed. The trade local in turn joined the national union of its craft wherever the chance presented itself. The same policy is followed at the present time. According to the latest (January, 1905) report of the American Federation, there are 1181 local trade and federal labor unions directly affiliated with the national federation.

In each case, however, the irregular grouping was considered an exceptional form.

The difference noted in the primary divisions appeared to a larger extent in the federate grouping. The district assembly, comprising the local assemblies of the Knights of Labor in a given locality, corresponded to the central labor union or federation of trade unions. Before the Knights of Labor movement, the life of these central organizations was ordinarily brief. After a stormy experience of personal jealousies, political affiliations, and trade-jurisdiction disputes, such associations commonly fell apart. As the Knights of Labor grew, many of these weak central labor unions were reorganized as district assemblies with large powers. A little later, under the organization of the American Federation of Labor, they came to hold a less important position, and retained merely advisory powers with little actual authority. In 1881 ten city federations were represented in the convention of "Organized Trades and Labor Unions." In 1904 the president of the American Federation of Labor reported 569 central labor unions affiliated with that organization.

During the first ten years of the history of the Knights of Labor movement the Knights made no provision for organizations similar to national trade unions. In the early eighties a reaction toward the old individual craft organization made necessary the recognition of national trade assemblies as an important subdivision.[1] At this juncture the cherished principle of the unity of all labor interests was subjected to severe test. Mixed assemblies were found too extensive in their sympathies, and the natural desire for meetings where members of one craft could discuss questions primarily of importance to the trade reasserted itself. Furthermore, the organization of industrial forces on a national scale made more pressing the need for national labor organizations along trade lines. As an immediate result, "national trade assemblies" closely analogous to the national trade union emerged.

[1] *Constitution of General Assembly, Order of the Knights of Labor, 1884*, Article 12, sect. 1, p. 22.

Under the law enacted by the General Assembly at the convention of 1882, there were two methods by which any craft within the Knights of Labor could organize as a national trade assembly of the order, and gain autonomy over trade affairs, preserving, however, close association with other branches of organized labor. The first was in accordance with an amendment to the constitution which permitted five or more trade locals to petition the executive board to call a convention for the purpose of forming a trade district.[1] The members of any trade could organize nationally under this provision by bringing local assemblies situated in all parts of the country under a common supervision. Under this provision the National Harness, Saddle, and Collar Makers' Union in 1883 was formed as a national trade assembly.[2] The second method was used where trades were organized in several local assemblies under the same district assembly. In such cases each trade could form a council composed of three delegates from each local assembly. To this council all trade matters were referred independently of the district assembly to which the respective local assemblies were attached. Carrying this formation a step farther, the law provided for national trade councils which could carry on the work of local councils on a large scale.[3] Thus trade locals in all parts of the United States and Canada might continue under their respective district assemblies or be attached to the General Assembly as the case might be, and obtain the additional advantage of having their trade problems considered by representatives of their own craft. In 1887, when the reaction toward organization by trades had fully set in, the general secretary-treasurer reported that there were twenty-two national trade assemblies in the order. Thereafter organized labor in the United States tended to form national trade unions, which either remained independent or became affiliated with the American Federation of Labor.

The national trade assembly and the national trade union differed in one important respect. The national trade assembly

[1] *Proceedings of the General Assembly, 1882*, p. 364 [n. p., n. d.].
[2] *Journal of United Labor*, July, 1883.
[3] *Proceedings of the General Assembly, 1882*, p. 368 [n. p., n. d.].

was entirely subordinate to the General Assembly, the highest tribunal of the order; the national trade union stood independent, acknowledging a nominal allegiance to the American Federation only as a concession to the larger aims of labor. The nearest approach to authority exercised by the American Federation occurs in jurisdiction disputes between national trade unions, where the Federation acts in a judicial capacity. The officials of the Federation assert that one of the strongest elements in the success of the organization has been the absence of any attempt to exercise power over the national unions. The real bond of union, according to this opinion, is the good will and confidence of the constituent members.

The activity of the two federations in carrying out their respective plans of organization, as outlined above, resulted from time to time in serious conflict. In theory any agreement whereby one federation with its branches subordinated itself to the other would have prevented discord. For instance, the Knights of Labor might have affiliated with the Federation of Labor on an equality with national trade unions. But personal enmity among the leaders, who steadily refused to concede recognition to the rival federation, made a permanent understanding impossible. A circular issued by authority of the 1882 convention of the Federation of Organized Trades and Labor Unions declared: "The open trades unions, national and international, can and ought to work side by side with the Knights of Labor, and this would be the case were it not for men overzealous or ambitious. Each should understand its proper place and work in that sphere." As each persisted in its efforts to include all wage-earners, the circles of activity intersected, with the consequence of dual authority on the part of the federations and divided loyalty on the part of the individual members.

The American Federation, profiting by the experience of earlier federations, from the beginning resolutely opposed dual organization in any trade. It was claimed that if an exception were made in favor of the Knights of Labor assemblies, a dangerous precedent would be established and the existence of

trade autonomy imperiled. Where dual affiliation did exist — for example, in the printing, hat, cigar, and brewing industries — it was seen that strict trade autonomy could not be maintained. The opposition to the national trade assembly of the Knights, in particular, arose not so much from the lack of trade autonomy as from the persistent attempts of the officials to organize assemblies of trades having a national or international union. The Knights of Labor, on the other hand, having in mind the absolute control which the General Assembly had over all branches in case of dispute, were anxious to secure as members persons already belonging to local and national trade unions. In carrying out this policy the Knights were led into serious conflict with the national trade unions. Among other organizations affected in this way was the Bricklayers and Masons' International Union. The national secretary of this union in an official statement (October 1, 1886) voiced the sentiment of the trade unionists: "We claim that any district assembly of Knights of Labor masons, in or near a locality where a branch of our organization exists, is a direct injury to the advancement of our craft, for we claim and demand that all men following a distinct calling having a national or international trades union in existence should be required to join the order of his calling and no other, so that all may be members of a parent organization." [1]

The disputed questions were discussed at repeated conferences, the American Federation adhering throughout to its original stand against dual affiliation in trade organization. At a meeting held in Philadelphia in 1886, between representatives of the Knights of Labor and of the national trade unions, the latter proposed as the basis of an adjustment: "The charter of any Knights of Labor Assembly of any trade having a national or international union shall be revoked, and the members of the same be requested to join a mixed assembly or form a local union under the jurisdiction of their national or international union." [2]

[1] *Reports of the President and Secretary of the Bricklayers and Masons' International Union of America, for 1886*, p. 105 [Washington, n. d.].

[2] *Proceedings of the General Assembly, 1887*, pp. 1444–1447 [n. p., 1887].

Renewed efforts were made from time to time to reach an amicable settlement. In 1889 and again in 1891 the proposition was restated by the Federation with slight modification of terms. The American Federation of Labor promised in 1889, that should the Knights of Labor "discountenance and revoke the charters of all trade assemblies or districts within the order, the Federation would agree to urge its members and all working people to become members of mixed assemblies of the Knights of Labor." The adoption of this plan would have given the national unions affiliated with the Federation complete control over their respective fields in all trade matters, and would have left to the local and district assemblies of the Knights of Labor the work of intellectual, social, and political improvement. In other words, the Knights of Labor, divested of all trade authority, would have become the central reform bureau of the labor movement. The Knights of Labor, however, refused to accept the terms proposed, and the Federation decided at the annual convention of 1894: "No meeting or conference with the Knights of Labor officials shall be held until they declare against dual organization in any one trade."

The opposed principles of the two organizations met sharply in a single issue, — the mutual recognition of working cards. The matter was vital to each organization. If the Federation and the national trade union did not recognize the mixed assembly and the trade assembly as bona fide locals, then the members were not union men and could not work with union men in closed shops. On the other hand, if the working card of the Knights of Labor were respected by the trade unions, the members by that act gained status as union men, and the Federation practically lost its fight for trade autonomy. In 1886, at a conference with the trade unions held for the purpose of "discussing past grievances, and to pave the way for the avoidance of future ones," the Knights of Labor proposed the mutual exchange and recognition of working cards, — "the card of any member of the order admitting him to work in any union shop, and the card of any union man admitting him to work in any

Knights of Labor shop."[1] The Federation of Labor refused to concede this position on the ground of self-preservation, since blacklisted and expelled members of trade unions or even men hostile to trade unionism, could be initiated into the order, and the trade unions would thereafter be obligated to accept the cards of these non-union men. Even though the Knights of Labor denied such an intention, the constitutional power to do so was present, and remained a menace so long as the standards of the two federations with regard to union membership were different.

On the other hand, the Knights of Labor suffered if the mutual recognition of working cards failed. Where a temporary alliance of forces was necessary, as in a sympathetic strike, the Knights could hardly be expected to work shoulder to shoulder with unionists, if at the conclusion of the struggle the trade unions could boycott the assemblies belonging to the order by refusing to recognize the working card. The unfavorable attitude of the Federation meant little to the Knights in 1886 when the order was strong and influential. With the growth of the trade-union spirit within the order and the corresponding decline of the mixed assembly, the question became more serious. No adjustment or compromise was ever reached, and it was only when the Knights of Labor ceased to hold an important position in the labor movement that the question at issue between the organizations practically settled itself.

From this review of the structural differences between the two federations, attention can now be turned to a comparison of their respective activities in certain typical fields. This will involve a survey of the policies of the two organizations with respect to (1) the union label, (2) coöperation, (3) strikes and boycotts, (4) the reduction in the length of the working day, (5) politics and legislation.

The union label. The union label was first used by a local cigar makers' union in San Francisco in 1874 to distinguish American-made cigars from the work of Chinese competitors.

[1] *Proceedings of the General Assembly, 1887*, p. 1446 [n. p., 1887].

Local assemblies of cigar makers were active in the Knights of Labor as early as 1882,[1] but apparently the use of the label did not at first cause any difficulty between the assemblies and the unions. The *Journal* of the Knights of Labor declared in November, 1882, "Both organizations, the Knights and the Cigar Makers' International Union, have a common purpose in trying to protect the product of union labor." Unfortunately, however, while the Cigar Makers' Union had adopted a blue label as the stamp of union goods, the Knights of Labor, wishing a distinctive mark, chose a white cigar label to circulate side by side with the blue label of the union. Largely as a result of this policy harmony soon gave way to a keen competition between the two organizations, growing more and more intense until it became bitter rivalry and open conflict. The general principle at issue in the controversy was the right of the Knights of Labor to organize whom they pleased, since the Cigar Makers' Union objected to the initiation into the order of workmen who had been branded as unfair by the union.

It was claimed that early in 1886, during a lockout by manufacturers in New York City in consequence of a strike against a reduction of wages, certain cigar factories involved had been organized by the Knights of Labor. Similar acts of hostility, the union asserted, had been committed at Milwaukee and Syracuse.[2] Notwithstanding a promise made by the general executive board of the order to investigate the charges as soon as opportunity would permit, and to revoke the charter of the offending assembly if the statements proved correct, the cigar makers ordered a boycott against all cigars bearing the label of the Knights and endeavored in every possible way to discredit the order. In a letter to the general master workman of the Knights, dated March 6, 1886, the president of the Cigar Makers' International Union said, "I consider the action of your organizers in New York City a bold and unscrupulous attack upon

[1] *Proceedings of the General Assembly, Knights of Labor, 1882*, pp. 374–375 [n. p., n. d.].

[2] *Proceedings of the General Assembly, Knights of Labor, 1886*, Special Session, pp. 30, 50 [n. p., n. d.].

recognized trade-union principles, and as hostile to the Cigar Makers' International Union in particular." In retaliation the General Assembly in 1886 adopted a resolution ordering all employees in the cigar trade, who were members both of the Knights of Labor and of the Cigar Makers' International Union, to withdraw from the union or leave the order.[1] This resolution marked a turning point in trade-union history in that it gave a determining impetus to the movement, already strong, from the Knights of Labor assembly in the direction of the autonomous trade union. The order discovered its mistake as soon as the convention of 1886 had adjourned, and at the following convention endeavored to correct the error by the following amendatory action: "Resolved, That members expelled from the order by the mandate adopted at the Richmond General Assembly concerning members belonging to the Cigar Makers' International Union be reinstated without paying initiation fee or back dues, and that all local assemblies are hereby ordered to place in good standing all members expelled by said order."[2]

Throughout the controversy between the Knights of Labor and the cigar makers, the Federation of Labor exerted its influence in favor of the union. If the Federation had recognized the label of the Knights of Labor, the order would have been virtually granted full rights as a union, and vested with coördinate authority in the conduct of trade matters. The proposed "treaty" of 1886 contained the provision that "the Knights of Labor shall not establish or issue any trade mark or label now issued, or that may hereafter be issued by any national or international trade union."[3] The Knights of Labor, however, regarded itself as a pioneer in the use of the label and refused to part with its independent use. At subsequent conferences between representatives of the Knights of Labor and the American Federation, the two organizations insisted on their respective demands without definite result.

[1] *Proceedings of the General Assembly, 1886*, pp. 137, 138, 200, 282 [n. p., 1886].

[2] *Proceedings of the General Assembly, 1887*, pp. 1733, 1822 [n. p., 1887].

[3] *Ibid.*, p. 1446.

The methods employed by the two organizations in extending the use of the trade label have been largely influenced by their structural differences. The Knights of Labor, highly centralized, have been able to require the issue of labels from headquarters, and to vest the general executive board with complete control over their distribution. Thus the constitution (1901) of the General Assembly provides (Article 4, sect. 19): "The general executive board shall take charge of and regulate all seals or protective designs to be distributed to members of the order, in such form as will be of service in protecting the products of their labor, and shall prescribe such rules and regulations as it may deem necessary for the use of the same; and no assembly or other branch of the order under penalty of forfeiture of charter shall indorse or sanction the use of any seal or design not issued or indorsed by this board." The general executive board of the Knights of Labor in 1884 adopted a general label to be used upon all goods manufactured or sold by members, but this device was soon replaced by individual trade labels. While the General Assembly has never declined to ratify the use of distinctive trade labels, it has always required that each must bear also the mark of the order, — a triangle within a circle.

The American Federation, on the other hand, has made no attempt to control the labels of national and international unions, merely indorsing and advocating those already adopted by the different trades, urging all union men to demand goods having the union stamp, and assisting in the formation of active label leagues to aid in educating the consuming public in the nature and appearance of trade labels. Only the labels used by local and federal labor unions, directly attached to the American Federation, are under the control of the Federation. The Federation has from time to time considered the adoption of a universal label as a means of gaining uniformity and more particularly of preventing counterfeiting. In 1900 the officials of the Federation obtained a legal opinion, to the effect that if all unions would surrender their labels and adopt that of the Federation of Labor as the authorized one, counterfeiting could be

more readily punished by law. Inasmuch as this would involve the surrender by each union of some part of the very trade autonomy for which the Federation has always contended, and the recognition of the sovereignity of the Federation, at least for the purpose of "issuing, controlling, protecting, and defending the universal label," [1] the step has not been taken.

Coöperation. It is clear that the founders of the Knights of Labor conceived an ultimate industrial system in which workmen should be their own employers. For inaugurating the coöperative commonwealth the structure of the Knights of Labor was far superior to that of the rival federation. The mixed assembly comprised men in many walks of life, and largely controlled demand as well as production. If a trade local embarked in a coöperative enterprise, only a limited number of consumers were directly concerned; but when a mixed local in a community organized into Knights of Labor assemblies ventured on independent production, the collective patronage affiliated therewith assured a market. Two schools of thought early differentiated themselves in the Knights of Labor. The one advocated an aggressive policy of strikes in order to enforce demands. The other, representing the conservative element, emphasized the futility of strikes as a factor in attaining permanent reform. It was due to the influence of the peace adherents that coöperation found persistent encouragement. In June, 1882, a coöperative fund was established and a coöperative board was created for the purpose of encouraging and conducting coöperative enterprise. Investments were made and enterprises started as the financial condition of the order justified. The compulsory nature of the law, however, provoked serious opposition, and contributions were soon made voluntary.[2] With smaller resources the officials thereafter sought to realize at least in some degree the industrial state conceived as the ultimate aim of the movement. Experiments in coöperative stores, factories, and institutions were reported in 1882 from seventeen

[1] *American Federationist*, December, 1900, pp. 376–377; *Report of Proceedings, American Federation of Labor, 1900*, p. 20 [Louisville, 1900].

[2] *Constitution of the General Assembly, Knights of Labor, 1884*, p. 16.

localities of the one hundred represented;[1] in 1887 the general coöperative board announced that eight halls and buildings were owned, and that eleven newspapers and fifty-four workshops, factories, etc., were engaged in productive coöperation.[2] The general result of such ventures was disappointing, leading to increasing reluctance to embark on independent undertakings and even to a desire to abolish the coöperative board.

Probably the chief cause of failure was the lack of business experience in the management of the coöperative enterprises. Such undertakings ordinarily originated in a strike or lockout, where men entered upon the project with funds drawn from the central treasury. As soon as the trouble ceased, and the choice arose between a certain position and participation in a risky venture, the enthusiasm so apparent at first abated, often bringing a total loss upon the General Assembly. The small confidence placed in the managers, engendering jealousies and constant suspicion, and the opposition met on all sides from capitalist producers, may also be cited as important influences in the business failure of the Knights. The most ambitious venture of the Knights of Labor in coöperation took place in 1884, when a coal mine at Cannellburg, Indiana, was purchased for $10,000. An assessment of 20 cents per member was levied in October, 1884, for the purpose of making improvements. The general secretary in his report to the eleventh session of the General Assembly, 1887, said: "Among the receipts of the office will be shown in the neighborhood of $2000 received from the Union Mining Company on account of the Cannellburg Coal Mine. We shall all be glad to learn that the investment of more than $20,000 instead of being a dead loss bids fair to be a source of income to the Order." Misfortunes, however, came in rapid succession, until in 1897 the general executive board decided to sell the mine for $4000.

The ideal of coöperation as conceived by the order included the establishment and maintenance of industrial peace by bringing

[1] *Proceedings of the General Assembly, Knights of Labor, Sixth Regular Session, 1882*, p. 291 [n. p., n. d.].

[2] *Proceedings of the General Assembly, Knights of Labor, Eleventh Regular Session, 1887* [n. p., 1887]; *Report of the General Coöperative Board.*

both employers and employees into a single organization. Though this ideal likewise was not realized, it explains the readiness with which the Knights so often consulted the wishes of the employers, and the willingness with which the order joined hands with one organization of employers, — the Farmers' Alliance. The American Federation of Labor, on the other hand, made no attempt to become an employer through coöperative enterprise, and even refused to organize farmers into unions on the ground that they were employing farmers and not workmen.

Strikes and boycotts. The Knights of Labor in principle have stood consistently for the arbitration with employers of all grievances. The preamble to the constitution adopted by the General Assembly in 1878 favored "the substitution of arbitration for strikes, whenever and wherever employers and employees are willing to meet on equitable grounds"; and the preamble to the constitution of 1884 included as one of its demands, "the enactment of laws providing for arbitration between employers and employed, and to enforce the decision of the arbitrators." In the event of arbitration failing, the boycott was regarded as the most effective weapon of labor. The same width of organization that facilitated the distribution of coöperative products enabled the Knights to make effective use of the boycott. Designed as a temporary expedient, this device was regarded as more effective than the strike, without involving the suffering attendant upon all protracted struggles. In the use of the boycott, the intertrade form of labor organization enjoys a peculiar advantage. A trade union in any locality may cease purchasing an article without appreciably reducing its sale, since the proportion of consumers belonging to any single union is necessarily small; but an assembly of the Knights of Labor supported by a large part of the consumers in the vicinity wielded an influence proportional to the purchasing power of all the members interested. More important still, under the centralized power by which the General Assembly controlled the subordinate divisions, the observance of a boycott might be strictly enforced on all members, since any assembly refusing to obey an order issued by the general executive board was guilty of insubordination and might be

suspended. In actual practice, however, the general executive board, which had authority to place a boycott, usually depended on the voluntary action of the membership. Circulars containing a full statement of the case were sent to the local assemblies, with the request that they be read at successive meetings to acquaint the members with the facts. In some cases pressure was brought to bear on retail dealers who were accustomed to handle the goods manufactured by the boycotted firm.[1]

The American Federation of Labor has paid considerable attention to the exercise of the boycott. The usual method employed in placing a boycott is as follows: National unions having grievances against employers send resolutions to the headquarters of the American Federation of Labor. The committee of the Federation whose duty it is to investigate the justice of the complaint, reports to the executive council or to the annual convention if in session. In case of a favorable report, a boycott is declared on the products of the firms involved, and the names of the manufacturers are published monthly in the "unfair list" of *The American Federationist*, the official journal of the American Federation of Labor. In addition to placing the firms on the "unfair list," circulars requesting all union men to cease purchasing the products of the boycotted firms are sent to the unions composing the Federation. At the present time the national officials exercise considerable care in the use of the boycott, and limit the number of firms on the "unfair list" in order that the boycott may be concentrated.[2]

At their fourth convention in Pittsburg, 1880, the Knights of Labor declared, "Strikes are as a rule productive of more injury than benefit to the working people, consequently all attempt to foment strikes will be discouraged." The general master workman in his address to the sixth regular session of the General Assembly in 1882 said, "A strike cannot remove or repeal unjust laws. for at best the strike secures but a temporary relief; it may result in an advance of wages, but if so it

[1] *Journal of United Labor*, February 11 and 25, 1888.

[2] *Report of Proceedings of the American Federation of Labor, 1904*, p. 85 [Washington, 1904].

is a dearly bought victory, and at the first available opportunity another reduction is imposed." At that time no provision for strikes appeared in the constitution of the General Assembly; but as the order came, with its growth, more and more into touch with practical affairs, periodic strike fevers swept over the membership and strike regulations became necessary. In the constitution of 1884 district assemblies were authorized "to adopt rules and regulations in regard to strikes" and district executive boards were given power to accept or reject the terms of settlement offered by employers.[1] Moreover a district assembly, having ordered a strike of any local in its jurisdiction, was permitted to draw upon the funds of other district assemblies whenever its assistance fund had been exhausted.[2] The amount received in this way from different assemblies was considered a loan without interest, to be repaid as soon as possible.

The new strike spirit did not confine itself to inaugurating trade or local strikes. Strong influences were at work to convert the order into an aggressive militant organization. Accepting the motto, "An injury to one is the concern of all," in the literal sense, the newly initiated element sought to widen the area of every strike by ordering out all employees of an offending employer. The Knights of Labor were well organized for undertakings of this character, controlling as they did all trades, and vesting in the General Assembly the right to order all subordinate divisions on strike whenever the situation justified such action. The disastrous end of the strike on the Missouri Pacific railroad system in 1886 brought the advocates of sympathetic strikes into temporary discredit. Resolutions were adopted at the special session of the General Assembly in 1886, forbidding any local, trade, district, or state assembly to declare a strike before a secret ballot had been taken of all the members in good standing and in no case permitting a strike unless two thirds of those immediately concerned voted in favor of it.[3] In two other

[1] *Constitution for District Assemblies, Knights of Labor, 1884*, Article 7, sects. 1, 2.

[2] *Constitution of the General Assembly, 1884*, Article 15, sect. 6.

[3] *Record of Proceedings of Special Session of the General Assembly, 1886*, p. 49 [n. p., n. d.].

instances — the longshoremen's strike of 1887 and the Reading Railroad strike of 1888 — the Knights of Labor tried the expedient of the sympathetic strike on a large scale, and each time failed to obtain their demands. Though the machinery for declaring sympathetic strikes remained, the order thereafter accepted the general verdict that federation activity in the form of sympathetic strikes was unprofitable.

The American Federation of Labor has from the outset regarded strikes as the necessary means to gain trade-union ends under a system of capitalistic production. Being merely an advisory center, and depending upon the support of trade unionists working through their respective national unions, the Federation has been unable to act positively or directly with respect to strikes. It has recommended certain policies such as the system of high dues and benefits, but it lacks the power to control strikes, so prominent in the Knights of Labor. Consequently the Federation, fully aware of this limitation and profiting by the costly experience of its contemporary, has followed a conservative course in the various conflicts between employers and employees, and has acted only as a source of moral and financial support to the national unions involved. While sympathetic strikes are not opposed by the Federation, and the various national trade unions are urged on occasion to assist other unions, the Federation holds it as a principle that the amount and character of assistance must be left to the judgment of each union. Strict adherence to this position limits the activity of the Federation to the collection and distribution of financial assistance to striking unions. It claims no power to call sympathetic strikes.

Reduction in the length of the working day. In the original platform of the Knights of Labor one of the most prominent of the expressed aims of the order was, "The reduction of the hours of labor to eight per day, so that the laborers may have more time for special enjoyment and intellectual improvement, and be enabled to reap the advantage conferred by the labor-saving machinery which their brains have created." At the eleventh session (1887) of the General Assembly the following

was adopted: "Resolved that the general master workman confer with the heads of international and national labor organizations with a view to holding a convention to bring about the adoption of the eight-hour law by a gradual reduction of the hours of labor." Nothing of importance, however, resulted from this action. Although the Knights possessed a system of government well adapted for general movements, they never formulated a definite plan for the inauguration of the eight-hour day.

During the first few years of its history the Federation contented itself with mere pronouncements on the subject. At its second session in 1882 it declared: "The national eight-hour law is one intended to benefit labor and relieve it partly of its burdens. . . . We therefore demand the enforcement of said law in the spirit of its designers."[1] A resolution at the third session, 1883, stated that "the Federation considers the question of shortening the hours of labor as paramount to all other questions at present." In the secretary's report to the convention of 1884 a definite plan of action involving the leadership of the Federation in the eight-hour movement was strongly urged: "It appears to be the generally expressed desire of the societies represented in this Federation that it assume the initiative in a national movement for the reduction of the hours. Sporadic attempts of individual trades in certain localities have met with varying degrees of success, but there is little doubt that a universal, centrally directed advance would prove both practical and triumphant." It was proposed, thereupon, that a vote be taken in all labor organizations before the next convention as to the desirability of a simultaneous and universal strike for the eight-hour day not later than May 1, 1886.[2] Realizing that the Federation was too weak both in authority and numerical strength to carry the project to a successful conclusion, the officials asked the coöperation of the Knights of Labor. The latter organization refused to indorse the movement, and the plan did not reach

[1] *Second Annual Session of Federation of Organized Trades and Labor Unions*, p. 1 [n. p., n. d.].

[2] *Fourth Session of Federation of Organized Trades and Labor Unions, 1884*, pp. 19–20 [Washington, 1884].

serious proportions. In 1888 a resolution passed the annual convention of the American Federation of Labor, fixing May 1, 1890, as the date for a general strike for the eight-hour day, and designating certain days in the interval on which simultaneous mass meetings in all cities were to be held. Another conference with the Knights of Labor for the purpose of forming a temporary alliance followed, and though the Knights again refused to participate in the movement, the Federation continued to make preparations for the struggle. As the date mentioned in the resolution approached, the officials sent circulars, pamphlets, and prominent speakers to different parts of the country.

In the meantime the more conservative leaders urged that the movement would have a better chance of success if one trade was selected to make the fight, and supported by the combined powers of the other unions belonging to the Federation. They argued that the more comprehensive the strike, and the greater the numbers involved, the smaller the group of workers from which the strikers might draw financial aid. This judgment prevailed. It was determined to inaugurate in place of a general strike a series of successive trade strikes, one trade after another being selected according to strength and strategic position until all trades had obtained the eight-hour day. This policy has since been followed. In 1890 the Brotherhood of Carpenters and Joiners was selected by the Federation, and a special assessment was levied in support of the strike. As a result the carpenters established the eight-hour day in several important cities. Other eight-hour strikes by various trades have been aided during the past fifteen years. At the twenty-fourth convention held in 1904 the American Federation indorsed the eight-hour movement of the International Typographical Union, and pledged both moral and financial support. The Federation further decided that if at any time after January 1, 1906, the Typographical Union needs financial assistance, the executive board shall levy the constitutional assessment. The present predominance of the American Federation in the labor world makes it likely that the "successive strike" will continue

to be the favored policy in carrying out general movements. There seems to be little doubt, moreover, that a series of trade strikes well directed and supported by the full strength of the working trade unionists will be more successful than a general strike, so long as a non-centralized organization like the American Federation maintains the leadership in the trade-union world.

Politics and legislation. The Knights of Labor and the American Federation of Labor have both recognized the advantages that a federation of trades has over separate trade unions in any reform movement involving political activity, and have shaped their respective policies accordingly. The two organizations have, however, employed different methods. The Knights of Labor as an organization was designed in the belief that the general interests of the labor world transcended the interests of particular crafts. Since general interests can be best promoted by political action, the Knights laid greater stress on political activity and aimed to bring into existence ultimately a labor party. On the other hand, the Federation holds that the best way to promote general aims is by each trade seeking zealously its own interests. Trade unionists regard the increase in the bargaining power of their members as the chief remedy in improving conditions. To right trade matters by confronting the employer with united strength is of more immediate concern to the trade unionists than any indirect gain from educational projects. Hence the trade unionist, without the larger social outlook enjoyed by the Knights of Labor in the mixed assembly, found a substitute in the discussion of trade topics with members of his own craft.

The position of the Knights of Labor was set forth by the general master workman in an address to the seventh session of the General Assembly: "One reason," he said, "why political parties degenerate is because the masses of the common people are not educated. If we were, we could more easily discern the difference between good and bad legislation; and we would not be clamoring so often for the repeal of bad laws. The chief aim of the Knights of Labor is to educate parties and

govern them intelligently and honestly."[1] In accordance with this view, education as a means to the larger end became an important branch of activity. The structure of the mixed local assembly of the Knights was well adapted to this function, since it included men of various callings and widely different walks of life. It was believed by the Knights that, where men of a single craft met apart from members of other trades, the class consciousness necessary for any decisive advance would be lacking. On the other hand, in their opinion an organization like the Knights, representing a highly centralized type of federation and disregarding the trade boundaries formerly observed, was well fitted to educate its members and promote a feeling of political solidarity among all classes of laborers. At the second regular session of the General Assembly a resolution was adopted, "that each local assembly shall devote not less than ten minutes nor more than one hour of each session thereof to the discussion of subjects bearing upon the labor question, such as convict labor, eight hours, child labor, how can the toiler receive a just share of the wealth he creates, etc."[2] The general executive board appointed lecturers from time to time, who visited the assemblies and addressed them upon economic and social topics. In May, 1880, appeared the first number of the *Journal of United Labor*, primarily designed as a medium of communication between the branches of the order, and as a herald of advanced views.

The structure of the Knights of Labor, besides affording opportunity for the training of the individual in the study of social questions, was highly efficient for direct political action. Here again the advantages of a centralized organization coextensive with the domain of labor were marked. Trade unionists in their independent organizations were too weak numerically to change the result of an election, while the members of the Knights of Labor pledged to mutual helpfulness were numerous enough to control the outcome. With the advent of the order, the belief

[1] *Proceedings of the Seventh Session of the General Assembly, 1883*, p. 409 [n. p., n. d.]. Quoted from an article which appeared in the Pittsburg *Times* of July 16, 1883.

[2] *Record of the Proceedings of Second Regular Session of the General Assembly, 1879*, pp. 28-29 [n. p., n. d.].

that labor must carry its demands beyond the workshop, and crystallize into the statute law definite reforms, received greater attention among workingmen than ever before. The constitution of 1879 (Article 10, sect. 1) laid down the principle of political activity in the following words: "A district assembly or a local assembly under the General Assembly may take such political action as will tend to advance the interests of the Order or the cause of labor. But when political action is contemplated, the regular business of the district assembly or the local assembly shall be concluded, and the district assembly or local assembly regularly closed. Local assemblies may properly use their political power in all legislative elections, and it is left to the discretion of each local assembly to act with that party through which it can gain the most. An assembly shall not take political action unless three fourths of the attending members are united in supporting such action. No members, however, shall be compelled to vote with the majority." From 1880 to 1885 the intense interest manifested in political affairs produced a note of warning from headquarters: "So surely as we run into politics shall we be disrupted." Politicians, recognizing the political possibilities, joined the order for the express purpose of converting it into a voting machine. In 1888 the order was on the verge of taking active part in the national campaign, and escaped only through the conservatism of the general officers. In many localities the secret but powerful membership of the Knights had elected labor candidates. So successfully had these municipal elections resulted that the rank and file became ambitious for larger victories. A party in which all reformers could find a place appeared a fitting substitute for the two corrupt, boss-ridden, political organizations. Active agitation in 1890 stimulated a wave of enthusiasm which aided materially in the formation in 1892 of the National People's Party, with "land, transportation, and finance," as the campaign cry.[1] Pledged in this manner to political action, the Knights dissipated much of their energies in vain efforts to make industrial forces politically supreme, and internal dissensions resulted.

[1] *Journal of the Knights of Labor*, Vol. XIII, No. 2.

The Amercian Federation has resisted all allurements to political action. This freedom from affiliation with political parties, however, has not been maintained without a struggle on the part of the ruling element in the Federation. The first convention, held in Pittsburg, recommended "all trades and labor organizations to secure proper representation in all law-making bodies by means of the ballot, and to use all honorable measures by which this result can be accomplished." [1] At every convention of the Amercian Federation, and at almost every meeting of local and state federations, the same question has arisen in some form or other. Until the pressure upon the Federation to declare for independent action became strong, no positive declaration of political principles was made. The committee on resolutions at the convention of 1893 reported a political programme, the several planks of which were adopted separately with amendments at the convention of 1894. The convention of 1895, however, declared that "the failure to adopt the planks as a whole was equivalent to a rejection"; and therefore that "the American Federation has no political platform." But when the Socialist Labor Party sought admission into the American Federation of Labor, decisive action became necessary. The application of the Labor Party was rejected on the ground that no political party as a party had a right to be represented in the councils of the trade unions. Subsequent efforts on the part of radical trade organizations to commit the Federation to political principles were so persistent that the New York convention of 1895 declared, "Party politics, whether they be Democratic, Republican, Socialistic, Populistic, Prohibition, or any other, shall have no place in the conventions of the American Federation of Labor." [2] The most persistent attempts in the same direction since 1895 have been made by the socialistic element in the conventions of the American Federation of Labor. In 1894 and 1902 the sentiment with regard to independent political action was fairly divided; but in the conventions of

[1] *Report of the First Annual Session of Federation of Organized Trades and Labor Unions, 1881*, p. 4 [Cincinnati, 1882].

[2] *Constitution of the American Federation of Labor, 1896*, Article 3, sect. 8.

1895, 1900, 1903, and 1904, resolutions with party political activity as their end were decisively defeated.

The Knights of Labor, although regarding legislative activity as secondary to the more direct policy of party political action, endeavored to forward labor legislation. The Cleveland session of 1886, for instance, adopted a resolution instructing the general master workman to appoint a legislative committee of three with headquarters at Washington during the session of Congress. The district and state assemblies used their influence in state legislatures. In the early years the chief reward for this activity was not so much actual legislation as a brighter outlook for future results. The preliminary work had a beneficial effect in making less difficult the subsequent task of the American Federation. Among the most important reforms advocated by the Knights were direct legislation, the initiative and referendum, bureaus of labor statistics, abolition of the contract system on national, state, and municipal works, compulsory arbitration, prohibition of child labor under the age of fifteen, and government ownership of telegraphs, telephones, and railroads.

As the American Federation wields little authority over the national unions, it has no way to command unity of sentiment on any political issue. The probable result of independent political action would have been internal strife with danger of complete disruption. The Federation chose therefore to advocate labor legislation in preference to participating as an organization in national and state elections. At the present time the American Federation lays great stress upon this function. Each convention delegates authority to the officials to center attention on special reforms. The executive council frames a bill embodying the necessary provisions, and champions its course until it either dies or passes successfully through the various legal channels. The legislative committee maintained at Washington is especially helpful in promoting this work. The chief legislative reforms advocated in recent years have been the national eight-hour law, Chinese exclusion, the initiative and referendum, anti-injunction laws, and the abolition of convict and imported

contract labor. In addition the Federation from time to time has brought to bear influence to prevent legislation which might prove harmful to the labor interests. The Federation has thus opposed laws providing for compulsory arbitration and the compulsory incorporation of trade unions.

The state and city federations perform locally functions analogous to the functions undertaken at Washington by the American Federation. In 1904 there were 32 state federations and 569 city federations.[1] The more radical local federations hold as an ultimate goal "the abolition of the wage system and the substitution of collective ownership by the people of all the means of production and distribution." This socialistic element desires organized labor to take part as a unit in all state and local elections. The more conservative element, following the example of the national federation, desires to exclude party politics from the meeting rooms, and to direct the labor vote in the interest of those candidates who declare themselves favorable to reform measures. The local federation frequently obtains from candidates an expression of opinion on important issues. Men known to be opposed to organized labor are declared unfair, and often defeated by the combined strength of a central labor union. Marked activity is likewise displayed in watching legislation and advocating plans for industrial and social betterment. In a majority of cases the prevalence of the more conservative sentiment accounts for the emphasis placed on labor legislation.

From a membership of 702,924 and an annual income of half a million dollars in 1886, the year of their greatest prosperity, the Knights of Labor have steadily declined in membership and power. Among the influences contributing to this result have been: the complete failure of expensive sympathetic strikes; the activity displayed in political affairs; the presence of two distinct forms of organization in the order, — the mixed district assembly and the national trade assembly; and finally, the overcentralization of power in the hands of the General Assembly

[1] *Proceedings of the American Federation of Labor, 1904*, p. 17 [Washington, 1904].

and the national officers. The American Federation, on the other hand, has shown marked progress within the last twenty years. In January, 1905, the Federation had an enrollment of 118 national and international unions. The average membership of the affiliated unions for the year ending September 30, 1904, was 1,676,000. The treasurer reported to the twenty-fourth annual convention, in 1904, an income of $307,009.09 with total expenses of $203,991.15. The Federation had advocated the individual trade strike in preference to the sympathetic strike; it has repeatedly placed itself on record as opposed to political action; it has advanced the principle of organization according to trades; and finally, by guaranteeing to each national or international union complete jurisdiction over its own trade, it has gained to a large extent the good will of the individual trades. So long as efficient leadership maintains this traditional conservatism, there is every reason to predict that the Federation will remain an important factor in the American labor movement.

3. The Hours of Labor[1]

A large amount of testimony has been taken by the Industrial Commission regarding the movement for fewer hours of labor, and the effects of reduction in hours upon production and upon the wages and conditions of workmen and their families. It is brought out that in nearly all occupations an increasing strain and intensity of labor are required by modern methods of production. Trade unions have generally been compelled to abandon their restrictions upon the quantity of work that a man shall turn out. The introduction of machinery and the division of labor have made it possible to increase greatly the speed of the individual workman. This intensity varies in different occupations. In glass blowing payment by the piece and unlimited output have resulted in peculiarly exhausting efforts. The glass-bottle blower, says the secretary of the union, working eight and a half hours, makes double the number of bottles, but his period of usefulness is ten years shorter than twenty years ago.

[1] From the Report of the Industrial Commission, XIX, 763–790.

In Europe, and formerly in this country, a man could blow glass up to sixty years of age; now he cannot continue work after he is fifty or fifty-five. Machinery operates in some cases to increase the intensity of labor, as in the boot and shoe factories, where the operator is required to handle thousands of pieces in a day and to guide them through the machines.

The testimony of a representative of the Cotton Weavers' Association shows this increasing strain of work. He says:

> It is a general complaint, "I feel that tired at night, I go home and get my supper and do not feel like going out at all, but go right to bed." Anybody who works in the mills now knows it is not like what it was twenty-five or thirty years ago, because the speed of the machinery has been increased to such an extent, and they have to keep up with it. In some mills in this city, and probably in other cities in this state, the operative is compelled to turn off so much production per week, and if the production does not come up to the point, he or she is discharged. There was a time when that was not the case. They took their sewing and their knitting along, and there was no anxiety about how much work they could get off, but it is not so now. Now they work from the time they go in until they come out. You can see them going to-morrow morning at ten minutes past six, and they will not come out until six to-morrow night.

The intensity of exertion operates to a less degree in work on other classes of machinery where the feeding is nearly automatic. Even where machinery has not been introduced, as in the case of bricklayers and carpenters, there has come about in the larger cities a more minute division of labor, so that one workman is occupied continuously on one kind of work, in which he acquires great speed.

It is certain that any programme for reducing this intensity of exertion must fail. The entire tendency of industry is in the direction of an increased exertion. Any restrictions on output must work to the disadvantage of American industry, and the employers are often right in their demand, usually successful, that such restrictions be abandoned. This being true, there is but one alternative if the working population is to be protected in its health and trade longevity, namely, a reduction of the hours of labor.

Extent to which this Reduction has Proceeded Already

This increased intensity of exertion is not found to so great an extent in farm labor. Nevertheless, testimony before the Commission shows that there has been a reduction in the Northern States in the hours of labor on farms, except in the seasons of harvesting. In the case of farm labor there is usually a longer period of rest in the middle of the day, which in the South oftens runs as high as two hours. This, of course, is a relief to the severity of the work, although it subtracts from the hours of leisure at the beginning and the end of the day.

Effect of Reduction of Working Time on Output

A reduction in hours in both manufactures and agriculture has accompanied a remarkable increase in the use of machinery and the division of labor, and on this account it is often impossible to measure the effect of a reduction of hours on the quantity of output.

The American mechanic, too, works harder than he did formerly, whether the hours have been reduced or not, so that it cannot always be maintained that a reduction of hours increases his speed. The character of his work and the method of payment have much to do with the result. It might be presumed that when paid by the day the workman would not increase his output per hour with the shorter day as much as when paid by the piece. But this is not borne out by the testimony.

The representative of a silk factory, indeed, holds that when employees are paid by the day the output in nine hours might equal that in ten hours in some departments, as the weaving department, though not in the spinning department ; also where piece wages are paid instead of time wages. He says :

> Where machinery comes in as a heavy element, a spindle is a spindle, and the more minutes it runs in a day the more work it will turn off. It cannot go any more in one minute than another, but it runs straight ahead, whereas in weaving the element of personality comes in. One has the knack of keeping his threads in straight, and another is careless and has to stop and mend them and lose 10 or 15 minutes' time. A really

good weaver will get off a great many more yards than a poor one on the same machine, whereas a spindle is a fixed quantity and the more hours it runs the more work it does.

[Weavers] are paid by the yard, whereas the spinner is paid by the day. They get day wages and they have no particular incentive to hustle ; so long as they keep their ends up and keep the spinning machine going they are doing their duty. . . . There is little if any objection on the part of the hands to working overtime ; you cannot keep it up long ; they get tired of it after a while, but for two or three months they rather welcome the change.

This witness had not actually tested the nine-hour day, but spoke from his judgment of the probabilities. Another witness, a representative of a large drop-forge establishment, testified, after three months' experience with the nine-hour day, that there is a slightly larger average daily output than there was for the ten-hour day in both day work and piecework, though in every other respect work was done under similar conditions. This has not been due to the fact that methods were lax previously, for there was rigid supervision under the ten-hour system. A part of the gain has been made by reason of the fact that under the nine-hour system the men go promptly to work on the minute and work up to the very close of the day ; also that a man can work normally at a higher rate of speed without pushing himself for nine hours than he can for ten hours. The fundamental reason, according to this witness, for the keeping up of the amount of production is to be found in the spirit of the men themselves. If the machines were operated at the highest rate of speed and were in perfect condition, and were continuously fed, a workman could not maintain his output at the same amount if the hours of labor were shortened ; but these perfect conditions are rarely, if ever, found. It cannot be demonstrated mathematically just how it happens that a man can produce as much in nine hours as he formerly could in ten hours, but as a matter of fact it has been the experience of almost every manufacturer, says this witness, that "a man can and will and does do more the moment he is justly and fairly and liberally treated."

It is true also that the higher the wages and fewer the hours the greater is the pressure upon the employer to substitute labor-saving devices and to be more careful in his selection of

high-grade workmen. No doubt it is true that often a given automatic machine will not run faster per hour in eight hours than in ten hours, but industry has by no means reached the limit of invention. Invention will cease only when the employer ceases to adopt new labor-saving machinery, and every reduction in hours and rise in wages keeps the employer further and further away from that sluggish policy. While a particular machine will not go faster in eight hours than in ten hours, the substitute for that machine, which the eight-hour day presses upon the employer to adopt, will go faster. Less hours in this way have an indirect as well as a direct compensating effect. Not only do they make it possible for the workman to keep up his intensity of personal exertion during each hour of the day and to work more days at a high rate of speed, but they cause the employer to economize his labor at every point and to improve its quality by better selection. One advantage to the employer in less hours is the smaller number of breakages and injuries to machinery, owing to more alert attention on the part of the workmen. For the same reason it is often true that the quality of the work is better.

This pressure upon the employees accounts in part for the greatly increased use of machinery and division of labor in the more highly skilled occupations. A representative of the building trades who testified before the Commission maintained that the lessening of hours made the erection of buildings somewhat more expensive ; a contractor stated that it had enabled employers to get better men and better work than under the long workday, and they do more proportionately in eight hours than they did formerly in nine ; also that through invention and the introduction of machinery buildings are now put up as cheaply as they were in 1872 and 1873, when the hours were ten a day.

A representative of the Chicago Bridge and Structural Iron Workers' Union holds that the eight-hour day has so increased the efficiency of the laborer that there is actually more work done in eight hours than was formerly done in ten hours.

A boiler manufacturer, having adopted the eight-hour day, testifies that he does not think his men do as much in eight

hours as they did in nine hours, taking one day as the basis of comparison; but that at the end of the year he believes he would find that they had done just as much as they did when they were working an hour longer. One condition necessary to bring this result is that he is careful to select the best grade of men in his employment and to treat them fairly. A manufacturer of mining machinery holds that it is to the interest of the manufacturer to employ his men only eight hours, since he gets better service out of the men. Formerly, when the hours of machinists were reduced from twelve to ten, and again when they were reduced from ten to nine, the same alarming predictions were made as now, when it is proposed to reduce them from nine to eight; yet the inventions in machinery have made it possible for manufacturers to reduce their hours and still make as much money as they did formerly in the longer workday. This witness holds that the eight hours in this industry are needed not so much to relieve the men of severe exertion as because a better educated man is required to do the work.

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The eight-hour day in the sheet-steel mills was brought about without difficulty, owing to the economy of adopting three shifts of eight hours each. Prior to 1884 there were two shifts working ten hours, and the furnaces lay idle between turns with coal in them, and had to be kept hot until the next set came on. The experiment was tried of increasing the speed and reducing the hours, introducing three shifts; and to-day three shifts are working in all these mills, and making nine instead of seven heats, as was formerly done in the ten-hour day.

Reduction of Hours in Mining

The most important instance in recent years of the adoption of the eight-hour working day has occurred in the bituminous-coal mining industry. The strike of 1897 secured for the four leading eastern coal states — Illinois, Indiana, Ohio, and Pennsylvania — in the bituminous mines the eight-hour day, and a similar reduction has been obtained in other Western States.

In Utah the eight-hour day was secured in 1896 by action of the legislature in a law applying to all mines and smelters. The difference in the methods by which this reduction was secured in the two cases adds interest to a comparison of the results which followed.

In Utah the operators and employers did not oppose the legislation at the time of its enactment, largely because they thought it might be the means of keeping down unions and strikes and disturbances among the employees. This object has apparently been obtained, since there are no active unions in the state. A similar law was enacted in Colorado in 1899, but was declared unconstitutional by the state court. At the same time a number of operators continued upon the eight-hour basis, even after the law was declared unconstitutional.

It should be noted that the reduction of hours in the bituminous-coal mines has not been strictly a reduction from ten to eight hours, since under the eight-hour rule a miner is required to be at his working place when the eight hours begin and when the eight hours end, and lunch time is taken from the miner's time rather than the employer's time; whereas formerly the ten hours included the time spent in going from the mouth of the pit to and from the face of the coal. In the Pennsylvania district the period is nine hours instead of eight, but includes the time spent in going to and from the mouth of the pit. Strictly speaking, the reduction is more nearly from ten hours a day to nine hours a day than from ten hours to eight hours. In Utah, however, in the case of the smelting works, the reduction is much more extreme, the hours, formerly twelve per day, being reduced to eight. This is a reduction of $33\frac{1}{3}$ per cent in the time, and would make necessary an increase of the working force, provided there were no increase in efficiency, by 50 per cent.

There is a general agreement that the fewer hours in the coal mines have increased the energy of the workmen, and that there has been little or no decrease in the amount of work turned out during the day. The men are stimulated "to do a good honest eight hours' work"; the foremen do not find them asleep, as they used to, or lounging around, or smoking.

The effect upon the efficiency of the workmen varies, however, with different occupations. While it is generally agreed that the miner does as much work in eight hours as formerly in ten, it is held by a few witnesses that this is not true of the furnace men in the smelters, to which the laws of Utah and Colorado applied. The furnace can only take so much material an hour, and the furnace men can do no more work on that account.

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On the side of the employer there is abundant evidence that the shortening of the working day in the mines has strengthened the motive to greater economy of time and better use of machinery and labor-saving devices.

In some of the metal mines of Utah and Colorado three shifts have been introduced instead of two shifts of ten hours each. The mine that works eight hours can produce more than one which works ten hours, not only because the men do as much in eight as in ten hours, but because under the ten-hour system the mine is idle four hours out of the twenty-four; whereas under the eight-hour system, one shift takes up the tools at the moment when the preceding shift lays them down, and no time is lost. It is contended by one witness that the system of shifts is impracticable in the bituminous-coal mines. The loss occurs in operating the tipple at which the coal is loaded on the outside. It is held that where two or three hundred men are employed the day shift and night shift cannot be successfully introduced, because the tipple cannot be operated at night. On this account this witness claims that the operator endures a loss through the eight-hour day, since he loses two hours in the use of his machinery.

On the other hand, an operator in the Massillon district of Ohio states that, where a mine is prepared to take care of the coal, a miner can produce as much in the eight hours as he could before in the eight and a half or nine hours, because formerly during a large part of this time he was waiting for cars, and where the equipment of the mines has been improved and the coal is handled promptly outside, there is not much difference in the output. Plainly, if the miner sends up as much coal in eight hours as in ten hours, and the mine is equipped adequately to

carry off the coal, then the two hours' loss of time in the use of the machinery is by no means an economic loss, since the machinery turns out the same amount of product in either case.

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It is certain that with the shorter working day the employer is much more strict in his supervision of his men; that he requires them to be on time, and deals summarily with those who loaf or lounge about. This increased care in supervision, coupled with economies brought about by the use of machinery wherever possible, and the adoption in metal mines of three shifts instead of one, are important factors in keeping up the output under the eight-hour system. The two factors combined, namely, increased energy on the part of the employees and increased economy on the part of the employer, have certainly in the mining industry maintained a daily output equal to that which existed before the eight-hour day was introduced. This is shown in the following table, compiled from the reports of the United States Geological Survey and the Illinois Commissioners of Labor, showing the production of coal for the six years from 1895 to 1900:

Bituminous-Coal Mining

Country at large

Year	Output	Average Days Active	Average Number Employed	Total Days Worked	Average Output per Day	Per Cent Mined by Machines
	Short tons				*Short tons*	
1894 . .	118,820,405	171	244,603	41,827,113	2.84	. . .
1895 . .	135,118,193	194	239,962	46,232,628	2.90	. . .
1896 . .	137,640,276	192	244,171	46,808,832	2.72	19.17
1897 . .	147,609,985	196	247,817	48,572,132	3.03	16.19
1898 . .	166,592,023	211	255,717	53,956,287	3.09	20.39
1899 . .	193,321,987	234	271,027	63,420,318	3.05	23.00
1900 . .	212,513,912	234	304,975	71,364,150	2.98	25.15

While the eight-hour day was not introduced universally in the bituminous mines in 1897, it applied to more than half of the output of the entire country. From this table it can be seen that during the two years 1895 and 1896, under the ten-hour

system, the average output per workingman per day was 2.9 and 2.72 tons; while in 1897, during the latter three months of which the eight-hour day prevailed, the average output per man was 3.03 tons per day ; and for 1898, 1899, and 1900, three years of the eight-hour day in the majority of the coal mines, the average output ranged from 2.98 to 3.09 tons. Each year of the eight-hour day shows for the country as a whole a larger output per day for each workman than the highest output of the ten-hour day. The table also shows the increase in the use of machinery already referred to.

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Advantages of Shorter Working Day

On the side of the working population there can be no question respecting the desirability of fewer hours, from every standpoint. They gain not only in health, but also in intelligence, morality, temperance, and preparation for citizenship. Even in those cases where machinery has not increased the intensity of exertion, a long workday with the machine, especially where work is greatly specialized, in many cases reduces the grade of intelligence. The old hand-work shops were schools of debate and discussion, and they are so at the present time where they survive in country districts ; but the factory imposes silence and discipline for all except the highest. Long workdays under such conditions tend to inertia and dissipation when the day's work is done. Lessening of hours leaves more opportunity and more vigor for the betterment of character, the improvement of the home, and for studying the problems of citizenship. For these reasons the short workday for working people brings an advantage to the entire community.

Of course, hours might possibly be conceived to be reduced to the point where the increased cost of production would overbalance these gains. If it were a question of reducing hours to absurdly low limits, nothing could be said in favor of the movement ; but where — as is actually the case — the goal set up by the working people is the eight-hour day, and there is no

proposition of any weight for a five-or a six-hour day, the arguments for reduction need no qualification from the standpoint of the workers and little from that of employers.

Furthermore, a reduction of hours is not accompanied by a permanent reduction in the daily rates of pay. Doubtless it is good policy for labor organizations, in demanding a reduction of hours, to concede a temporary reduction in the rate of pay per day, which might be consistent with an increase in the rate per hour. The granite cutters adopted this plan, and when their hours were reduced from ten to nine they accepted a drop of twenty-five cents a day in wages. One year later they regained the wages of the ten-hour day. Again they dropped twenty-five cents in order to get the eight-hour day, and in another year they regained the twenty-five cents. A reduction of hours is the most substantial and permanent gain which labor can secure. In times of depression employers are often forced to reduce wages, but very seldom do they, under such circumstances, increase the hours of labor. The temptation to increase hours comes in times of prosperity and business activity, when the employer sees opportunity for increasing his output and profits by means of overtime. This distinction is of great importance. The demand for increased hours comes at a time when labor is strongest to resist, and the demand for lower wages comes at a time when labor is weakest. A gain in wages can readily be offset by secret agreements and evasions, where individual workmen agree to work below the scale ; but a reduction of hours is an open and visible gain, and there can be no secret evasion. Having once secured the shorter working day, the question of wages can be adjusted from time to time according to the stress of the market.

Respecting the proposed extension of the eight-hour workday to all manufacturing and mining industries, the experience of the Australasian colonies indicates that it is practicable, provided it be gradually brought about. True, as regards the resulting cost of production, the reduction would have different effects in different occupations. In some cases the eight-hour day would at first increase the cost, while in others there would

be no increase. From the immediate standpoint of the employer it might seem that the hours should not be reduced in those occupations where cost would be increased, but that a concession of fewer hours might be made to the workmen in those occupations where cost would not be increased. A discrimination of this kind would require a minute investigation of all industries, and in the end would not be conclusive, since the question of reduction of hours usually turns not on an inquiry into costs, but upon the economic strength of the labor interest or upon the health requirements of the employees. In all cases where reductions have been brought about there have been strenuous objections and alarming predictions, but after a very brief period of trial these objections have disappeared, except where lack of uniformity remains a ground of complaint; and employer and employee with this exception alike have agreed upon the advantages of the change. On the other hand, there is a reason for avoiding a hard and fast standard of hours for all trades in the fact that the physical and mental exhaustion and the hygienic surroundings are different. The more injurious occupations call for a greater reduction in the number of hours than the less injurious ones, and this, as will be shown later, is the true basis on which the reduction of hours by legislation should be based.

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Shorter Workdays through Labor Organization

In the absence of legislation the only effective means of securing a reduction of hours is through labor organization. This is of course the method by which the most significant and important reductions in recent years in the United States have been secured. The concentration of effort on this point by the American Federation of Labor for the past fifteen years has already accomplished notable results. The general effort, beginning in 1886, is believed to have reduced the day's labor of the working people of the United States by fully one hour. Where the hours had been twelve they were reduced to eleven; where they had been eleven they were reduced to ten.

The cigar makers were the first organization to secure an extensive adoption of the eight-hour day, and their success dated from May, 1886. A special reason for the strength of the union in this trade lies in the possession of the cigar maker's label, which has made it possible for union men to secure higher prices for their products than those secured by non-label workers. It is not maintained by the representatives of this union that the shorter workday in their craft is followed by a corresponding increase in the output per hour, and indeed the reduction in hours is advocated mainly as a means of distributing employment more regularly and of absorbing the unemployed.

In the building trades the great majority of the workmen in the local trades councils have secured the eight-hour day. There does not seem to be any reason in the nature of their work why they should prefer fewer hours than prevail in other trades. Theirs is a seasonal trade, and it would seem that the motive to work excessively in the busy season, in order to earn money enough to tide them over the winter's idleness, would be as strong as it is in the case of the longshoremen and the clothing makers. Neither is their work as trying as indoor work ; yet the members of their organizations who work in shops do not, as a rule, have the eight-hour day. The explanation in general is found in the strength of the labor organizations and the large numbers of contractors, often of relatively small economic power, for whom they work. In the case of indoor work the factories are in the hands of corporations, and it is more difficult to secure reduction of hours in dealing with the large manufacturers than with the small employers.

The hours of window-glass blowers are forty a week in the blowing department, although they are more in other departments. The reasons advanced by the representative of the union for this short time is that the men produce enough in that time for a fair week's work. Window-glass cutters have a limit on the amount of work a man shall be permitted to do in a day, but as they are paid by the piece and are permitted to quit work as soon as they have completed their task, the hours vary widely, averaging not more than ten.

The brewery business is one requiring continuous attention, and it was formerly believed that the eight-hour day was impracticable. The men were working twelve hours in two shifts, but through the strength of their organization the hours have been reduced to eight in three shifts, without any injury to the industry.

The workdays of longshoremen prior to their organization, along the Great Lakes, were irregular and long on the average. They often worked as long as twenty-four and sometimes thirty-six hours at a stretch. Through the influence of their association this system has been wiped out and the hours of labor have been materially reduced. On the Lakes the men work from ten to twelve hours, on the coast rather longer. The season is a short one, not over eight months at the most, and with the keen competition of the railroads that run parallel with the Lakes it is essential that vessels be given the best dispatch possible. If the work were more steady, the men would favor a still shorter workday. Under the conditions existing, however, the eight-hour day is not possible, or even thought of by the members of the association.

The reports of the New York Bureau of Labor statistics since 1891 have contained complete investigations of the hours of labor of organized workmen in that state. The following summary prepared by the commission shows the changes in the hours which have taken place:

The number of employees fluctuated between 186,003 in 1891 and 407,235 in 1899, — a growth partly natural and partly due to an increasing number of establishments reporting. The results may be summarized as follows:

Proportion of Employees working the Specified Hours per Day, 1891 to 1899

	1891	1892	1893	1894	1895	1896	1897	1898	1899
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
8 hours or less . .	9.3	9.0	10.7	14.4	11.9	9.4	9.7	8.2	8.1
9 hours	16.6	16.5	18.1	17.8	17.9	20.3	20.9	22.2	22.1
10 hours.	72.2	72.5	69.2	65.1	67.9	66.6	65.5	65.8	66.1
Over 10 hours . .	1.9	2.0	2.0	2.0	2.3	3.7	3.9	3.8	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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The movement of the Federation of Labor for fewer hours was in abeyance for a number of years, but within the last three or four years has been vigorously renewed, and within that period such industries as those of the machinists and the miners have secured quite generally the nine-hour or the eight-hour day. There is no effort of labor organizations more necessary, nor one in which they have more generous sympathy from the public, than this effort to secure a reduction of hours. Their demand for a shorter workday is peculiarly strong where, as is generally the case at the present time, they forego their demand for restrictions on output, and permit the employer to have a free hand in the management of his business. Reduction of hours is the concession to which they are entitled in return for the increased exertion which they concede in removing all restrictions on output and machinery.

Legislation governing Hours of Labor

While the efforts of labor organizations in behalf of reasonable reduction of hours are in general to be commended, it is plain that they cannot be expected to reach all classes of labor, nor indeed those most in need of protection in this regard. It has been estimated that labor unions include only 10 or 15 per cent of the wage-earning population. They do not include, to any great extent, women and children, who in 1890 constituted 20 per cent of the employees in manufactures, and who, on account of physical weakness or immature years, stand in greatest need of reasonable hours. Even those organizations which are able to secure the shorter working day are handicapped in competition with establishments where non-union labor prevails. In an industry whose products are sold throughout the country, other conditions being also equal, uniform hours and wages are essential in order to place manufacturers on the same competitive level. The stability of the eight-hour day among the mine workers depends on the extensive organization of labor in that industry. The chief reason why the building trades have been able so extensively to secure the eight-hour day is that they are not subjected

to interstate competition, and are able, therefore, to reduce the hours in one locality without driving trade to other localities. These favorable conditions are absent from the great majority of the working population.

Legislative regulation of the hours of labor, from any point of view, must be considered as supplementary to regulation by private contract and labor organization, where these methods fail and where there is evident reason for the reduction. In England and in America it has generally been held that legislation reducing the number of working hours should apply only to women and minors, and not to men. The latter have been held to be better able to care for themselves and to secure, through organization or otherwise, the improved conditions which they demand. But women and children have been considered weaker in bargaining and more in need of legislative protection. There is a tendency in both countries, however, to depart from this view and to legislate for men as well as women in the regulation of hours. While such legislation has not as yet been actually enacted in England, it has been adopted in Utah and Wyoming in the case of miners and smelters. With these two exceptions the legislation of American states, reducing the hours of labor, applies only to women and minors. Where men work in the same factories they generally get the advantage of the shorter workday of the women and children, although this is not always so.

The problem of legislative regulation turns upon three questions: first, practicability; second, constitutionality; third, uniformity.

1. Practicability. Legislation respecting hours of labor stands upon an entirely different footing from legislation respecting wages. It is practically impossible to devise any legislation which will effectively maintain a minimum rate of wages for any occupation, or for the country at large, even should legislative interference of this kind seem advisable. Secret evasion would quickly nullify such a law. But legislation setting a maximum to the number of hours of employment can be so framed and administered as to prevent evasion. It must be observed,

however, that reliance cannot be placed upon prosecution of the employer by the employee. The latter is in a dependent position, and the implied threat of discharge is too heavy a penalty to pay for a doubtful victory in a legal prosecution. Such a prosecution is possible only where the employee is backed by a strong labor organization; and a labor organization strong enough to prosecute an employer under state laws is strong enough to secure its demands without the state law. Legislation is needed only where organization fails. This being so, legislation concerning hours requires the creation of a strong force of factory inspectors. The factory inspector is the public prosecutor of violations of factory laws. The simple provision existing in the laws of Massachusetts, New York, and other states, requiring that the employer shall post in his factory the hours for beginning and quitting work and the interval for the noonday meal, and providing penalties where this notice is not posted, makes it possible for the inspector to discover by his own inspection whether the shop is working overtime or not. With this simple provision a factory working outside the posted hours is *prima facie* violating the law, and it is not necessary that the factory inspector should call in the employees as witnesses and subject them to the danger of discharge. The inspector, like a police officer, becomes his own witness, with the most conclusive of testimony. Where the legislation respecting hours is evaded, as it undoubtedly is in some cases in New York and other states, it will be found that the defect lies chiefly in the failure to enforce the provision requiring the posting of hours and in the necessity of summoning the employees as witnesses. Sometimes this failure is excused on the ground that the requirement is a mere technicality, and that it would be a petty persecution on the part of the inspector to prosecute for every trifling detail; but in the enforcement of a law of this kind this particular technicality is all important; and if it is intended to enforce the law at all, the posting of the hours is an essential condition of success.

In some occupations, like the manufacture of clothing and notions, it is often possible to evade the short-hour legislation by requiring employees to take work home at night, and where

they are not organized they are afraid to refuse. To meet this evasion the provisions in the law of Massachusetts and other states requiring all home workers to have a license, and requiring also that the employer furnish to the factory inspector a list of all his home workers, is the most effective device yet enacted into law. The inspector refuses to grant licenses for home work to those who work in the daytime in the factory, on the ground that they are already working the legal limit, and that to take work home at night would be an evasion of the law. Consequently the inspector, in case of violation, prosecutes the employer, not directly for sending work home at night, but for furnishing work to unlicensed home workers. A prosecution on the former account would require testimony of the home worker, and would result inevitably in connivance and evasion. A prosecution on the latter account requires only careful inspection on the part of the officer.

The foregoing technical details are noticed to show the practicability of legislation for factories and mines regarding hours of labor. It does not follow that such legislation will be practicable for farm labor or for home workers. Its success depends upon the existence of establishments separate from the home. Indeed legislation of this character is justified mainly by the existence of the factory system, the increased intensity of exertion, the injury to the health of the worker, and the greater profitableness of labor which that system has introduced.

2. Constitutionality. Legislation restricting the hours of labor has been overthrown by the courts in many states on the ground of unconstitutionality; and undoubtedly this is the main obstacle in the way of enacting such statutes. The ground on which these decisions are rendered is their interference with freedom of contract and with the free exercise of one's powers, or with the free acquisition of property. Such laws as have been sustained have been justified on the ground of the preëminence of the police power of the state; but the proper extension of the police power is viewed differently by different courts. Regarding the nature of the police power in itself there is no difference of opinion; it is supreme wherever reasonably applicable, and

may be invoked to restrict or limit the freedom of contract; but as to its extent there are differences of legal opinion. It includes the protection of the health, safety, morals, and welfare of the public. These objects are indeed broad, and might apparently on their face justify many kinds of interference. The main point of difference in the decisions of the courts respecting the question of hours is whether the police power extends only to the protection of the public at large, or whether it can also be invoked to protect the individual against himself, as when he is prohibited from making a contract which is injurious to himself. If it can be shown plainly that the regulation in a particular case is necessary and reasonable for the protection of the community, as for instance against contagious diseases, then the police power plainly includes the power of the legislature to prevent individuals from making such uses of their own property, or from making such contracts as would thus injure the community. Many courts have held that the police power cannot be invoked to prohibit a person from taking industrial risks which imperil only himself and do not affect the community. This ruling, however, has not been applied in the case of the factory laws, which have been enacted by more than one half of the states, with the object of protecting employees from dangerous machinery and unwholesome conditions of work. The leading decision on this point[1] holds that, while it is true that in the absence of a contract to the contrary the employee assumes the risk of his occupation, yet the legislature is not thereby restricted from lessening these risks through police regulations. The court denied the contention that

> Neither the public welfare nor the public health is involved, inasmuch as the protection thought to be afforded is limited to the individual employee, who, by his contract of employment, signifies a willingness to use the machine in its dangerous condition, and therefore cannot be heard to complain.

The court continues:

> A man may contract to use such machinery or to perform dangerous services, and have no remedy for injury; but we are not aware that the

[1] *People* v. *Smith*, 66 N. W. Rep. (Mich.), p. 382.

police power is limited by such contract. As between the parties themselves a contract may cut off legal redress for injuries sustained; but we are not satisfied that the authority of the State is limited to the protection of those who do not sustain contract relations with each other.

The court also intimates that in assuming these risks the employee is not altogether free, and his contract therefore does not come under those provisions which protect the freedom of contract. On this point it says:

Laws of this class embrace provisions for the safety and welfare of those whom necessity may compel to submit to existing conditions involving hazards which they would otherwise be unwilling to assume.

The Supreme Court of the United States in the Utah mining case, where the legislature restricted the hours of labor to eight, takes similar ground, and sets forth the inequality of bargaining power between the employer and employee as a justification of legislation protecting employees, even though they be adult males. It says:[1]

The legislature has also recognized the fact, which the experience of legislatures in many states has corroborated, that the proprietors of these establishments and their operatives do not stand upon an equality, and that their interests are, to a certain extent, conflicting. The former naturally desire to obtain as much labor as possible from their employees, while the latter are often induced, by the fear of discharge, to conform to regulations which their judgment, fairly exercised, would pronounce to be detrimental to their health or strength. In other words, the proprietors lay down the rules and the laborers are practically constrained to obey them. In such cases self-interest is often an unsafe guide, and the legislature may properly impose its authority. It may not be improper to suggest in this connection that although the prosecution in this case was against the employer of labor, who apparently, under the statute, is the only one liable, his defense is not that his right to contract has been infringed upon, but that the act works a peculiar hardship to his employees, whose right to labor as long as they please is alleged to be thereby violated. The argument would certainly come with better grace and cogency from the latter class. But the fact that both parties are of full age and competent to contract does not necessarily deprive the State of the power to interfere where the parties do not stand upon an equality, or where the public health demands that one party to the contract shall be protected against himself. The State still retains an

[1] *Holden* v. *Hardy*, 18 Sup. Ct. Rep., p. 383.

interest in his welfare, however reckless he may be. The whole is no greater than the sum of all the parts, and when the individual health, safety, and welfare are sacrificed or neglected the State must suffer.

It will be noticed in the foregoing decision that the court sustained that view of short-hour legislation which holds that in protecting the employee the state is protecting the community at large ; and that the police power can be invoked, not merely to prevent an individual from using his freedom in such a way as to injure others, but also to prevent him from using his alleged freedom in such a way as to injure himself.

Prior to the enactment of the Utah legislation above referred to, the enactments of different states extended only to the protection of minors and women. The protection of minors is plainly justified by the lack of full legal rights and their inability legally to enter into any contract whatever. In the case of adult women, the police power is invoked, not on the ground that they do not enjoy freedom of contract, but on the ground that the state is interested directly in their health. It was upon this ground that the earliest American law regulating the hours of women, namely, the sixty-hour law of Massachusetts, enacted in 1874, was sustained. The court decided [1] that the legislature had power to provide that "in an employment which the legislature has evidently deemed to some extent injurious to health, no person shall be engaged in labor more than ten hours a day, or sixty hours a week." Only one other ruling has been made on the subject, although fourteen other states restrict the hours of adult women in factories and the legislation has not been challenged. An opposite result was reached by the court in Illinois, which declared unconstitutional the eight-hour law applying to adult women in factories, on the ground that they were fully as competent as men to make their own contracts for work in any lawful occupation.[2]

The decision of the Supreme Court of the United States on the Utah mining law extending the principle of legislative protection to workingmen as well as women is so important for the

[1] 120 Mass., 384.

[2] *Ritchie* v. *People*, 155 Ill., 98.

guidance of legislatures and courts in enactments of this kind that the grounds of the decision should be clearly understood. The Supreme Court holds in substance that a state law reasonably calculated to protect employees in dangerous or unwholesome occupations, by means of a reduction of the hours during which they are permitted to work under such conditions, is not in conflict with the fourteenth amendment of the Constitution of the United States, for the reason that it neither abridges the privileges or immunities of the citizens of the United States, nor deprives either the employer or the employee of his property without due process of law, nor denies to them the equal protection of the laws. The court noticed that the police power of the states has been greatly extended during the present century, on account of the enormous increase in the number of occupations which are dangerous or so far detrimental to health as to demand special precautions for the well-being and protection of employees or the safety of adjacent property, and that while "the police power cannot be put forward as an excuse for unjust or oppressive legislation, it may lawfully be resorted to for the purpose of preserving the public health and safety or morals, or the abatement of public nuisances; and a large discretion is necessarily vested in the legislature to determine not only what the interests of the public require, but what measures are necessary for the protection of such interests."

The court concurred in the following observation of the supreme court of Utah:

> Poisonous gases, dust, and impalpable substances arise and float in the air in stamp mills, smelters, and other works in which ores containing metals, combined with arsenic or other poisonous elements or agencies, are treated, reduced, and refined, and there can be no doubt that prolonged effort, day after day, subject to such conditions and agencies, will produce morbid, noxious, and often deadly effects in the human system. Some organisms and systems will resist and endure such conditions and effects longer than others. It may be said that labor in such conditions must be performed. Granting that, the period of labor each day should be of reasonable length. Twelve hours per day would be less injurious than 14, 10 than 12, 8 than 10. The legislature has named 8. Such a period was deemed reasonable.

Respecting the control which the fourteenth amendment to the Constitution of the United States imposes upon state legislation, the Supreme Court affirms that the science of law is to a certain extent a progressive one, and that the Constitution of the United States, "which is necessarily and to a large extent inflexible, and exceedingly difficult of amendment, should not be so construed as to deprive the states of the power to so amend their laws to make them conform to the wishes of the citizens, as they may deem best for the public welfare, without bringing them into conflict with the supreme law of the land"; and this need of revision of laws grows out of new conditions of society as they arise, and "particularly the new relations between employers and employees."

This decision of the Supreme Court of the United States makes it plain that state legislatures are competent, so far as the Constitution of the United States goes, to regulate the hours of labor in any occupation, or for any class of employees, where it can be shown that the occupation is injurious to health, and that the proposed reduction of hours is not excessive and unreasonable.

At the same time, it must be noted that state constitutions are supreme over state legislatures, and that these constitutions, under the decisions of the several state courts, differ widely in the restrictions which they place on the legislative body. The supreme court of Colorado in 1899,[1] in passing upon a Colorado statute identical with that of Utah, held that the Utah constitution contained a mandatory provision, namely, that "the legislature shall pass laws to provide for the health and safety of employees in factories, smelters, and mines," and seemed to intimate that it would require such a clause in the Colorado constitution to authorize a law limiting the freedom of contract of such employees. It held that, notwithstanding the decision of the Supreme Court of the United States, the police power of the legislature of Colorado does not extend to the protection of an employee against himself in making a contract for employment. It is to be noted, however, that neither the Utah court nor the Supreme Court of the United States based its decisions on the mandatory clause of the Utah constitution, but upon the

[1] *In re* Morgan, 46 Pac. Rep., 756.

police power of the state.[1] The conclusion to be drawn is that, so far as the Constitution of the United States is concerned, state legislatures are competent to reduce by law the hours of labor in dangerous or unwholesome occupations, and that the constitutionality of such legislation under the several state constitutions will naturally be decided differently; but that in any case the people of each state have the remedy in their own hands, through a proper amendment of their constitution, similar to that of Utah.

The basis of these decisions is not the need of the working people for fewer hours in order that they may have more leisure in general, but simply the injury imposed by the occupation upon their health. This of course is a broad position and is indefinite in extent. Legislation regulating the hours of women applies to all factories, and often in practice makes it necessary for employers to fix the same hours for men in the same establishments. While it is doubtless true that in many occupations excessive hours are injurious to the health of men as well as women, conditions differ greatly in different industries, or even in different establishments in the same industry. Legislation, therefore, upon this subject cannot be general, but must be based upon accurate investigation of the conditions in the several industries. The Industrial Commission has taken testimony regarding the evil effects of long workdays in various trades, but has not been able to follow this line of inquiry to the extent that its importance requires. A field investigation of injurious occupations might properly be undertaken by the United States Department of Labor, and for that purpose the Department should be provided with adequate funds. The investigation should cover the leading industries of the country, and should include the employment of women, children, and men, the number of hours worked in different parts of the country and in foreign countries. The Department should be able to employ such medical and technical experts and to make such medical and chemical tests as the nature of the inquiry suggests. Such an investigation might determine the ages of employees in such establishments,

[1] 46 Pac. Rep., 761; 18 Sup. Ct. Rep., 383.

the length of time they had worked at the trade, the number of days lost on account of sickness, and the character of the sickness. An investigation of this kind, conducted by expert authorities, would prove the most valuable contribution which could be made to the scientific and just action of the several states in the important matter of regulating the hours of labor.

In line with the preceding observations it may be noted that in Great Britain the factory and workshop act of 1901 authorizes the secretary of state, when he is satisfied upon investigation that any process or mechanical arrangement is dangerous, to draw up a draft of regulations prohibiting or limiting the employment of persons and prohibiting or controlling the use of any material or process. The law applies to factories, workshops, and tenement workshops.

3. Uniformity. The serious defect in legislation regulating the hours of labor in factories is found in the lack of uniformity in the different states. Massachusetts has established the 58-hour week for women and children in factories. The adjoining state of New York places the limit at 60 hours; New Jersey at 55 hours; Pennsylvania at 60 hours; Wisconsin, 48 hours, but permitting contracts for overtime; South Carolina and Georgia, 66 hours; others at 60 hours a week. There are twenty-two states that have no restrictions for adult women, eighteen that have no restrictions for women under twenty-one, and seventeen that have no restrictions on male minors. Utah and Wyoming are the only states that limit the hours of men, and this applies only to workers in smelters and underground mines.[1]

While it is doubtless true that, within limits, the fewer hours of one state do not place that state at a disadvantage, owing to the greater energy which fewer hours make possible, yet a further reduction by law from the 58 hours of Massachusetts, or the 55 hours of New Jersey to, say, 48 hours, as is the case in Australia, seems exceedingly difficult to bring about as long as other states retain a maximum as high as 60 or 66 hours, and still other states have no restrictions whatever. A greater degree of uniformity of legislation on this point is an urgent

[1] Report of the Industrial Commission, V, 50.

requirement. After an experience of seventy years in England and nearly thirty years in Massachusetts, together with the more recent experience of twenty other American states, legislation reducing the hours of woman and minors in factories has justified itself as a proper action for any civilized state. It is true that local differences exist in the climate and other conditions, but these should not be considered decisive. Those states which are just now advancing to the position of manufacturing communities might well learn from these examples the lesson that permanent industrial progress cannot be built upon the physical exhaustion of women and children. Factory life brings incidentally new and depressing effects which those whose experience has been wholly agricultural do not appreciate. But the experience of states which have pushed their way from agricultural to manufacturing industries, and have found that their delay in protecting their factory employees has weakened the physical and moral strength of the new generation of working people, would seem to be an experience which the citizens of new manufacturing states would hope to avoid. A reduction in hours has never lessened the working people's ability to compete in the markets of the world. States with shorter workdays actually manufacture their products at a lower cost than states with longer workdays. Several witnesses before the Industrial Commission, both manufacturers and employees, have urged a national law reducing the hours of women and children in factories to a uniform standard. There is evidence that the demand for such a law is growing in strength. But federal legislation, with the attendant force of federal factory inspectors, is objectionable. Other countries, even Germany, with its federal form of government, have uniform factory laws covering all parts of the land ; but it has been the pride of the American Commonwealth that, except in great emergency, no state should be coerced to do that which is either for its own interest or for the interest of other states. This principle is sound, but it cannot be overlooked that those states which profit by their strategic position to hold their sister states below the level of humane self-protection demanded by modern factory conditions

are storing up against themselves feelings of resentment and retaliation. It is certainly practicable for any state to bring its hours of labor for women and children in factories down to the standard of 55, set by New Jersey. This standard is near that of our principle competitor, Great Britain. This, at least for the present, should be the standard adopted on its own initiative by every state that enters the ranks of factory production.

Federal Legislation

While in manufactures and mining the regulation of hours belongs to the several states, yet in transportation the interstate character of the industry brings the subject under the powers of Congress. The policy of congressional action depends upon the need of protecting the traveling public and freight traffic, and the inability of certain classes of employees to organize for their own protection. On account of the nature of train service the hours of railroad employees are necessarily irregular. A certain distance must be covered before the train crew can be released, and the time required may be short, or, under exceptional circumstances, may be exceedingly long. There is, however, a very general tendency of railroad management to bring the hours of trainmen into reasonable limits, and the ten-hour day is the ideal standard established by agreement for such service. The principal motive actuating the management is the necessity that the trainmen should be wide-awake, and this acts as a protection against unreasonable demands ; at the same time, prior to the organization of the railroad unions the workday was much longer than at present. Even now, in the case of the unorganized switchmen, telegraphers, trackmen, and station men, the hours are frequently twelve a day, and, in some cases, from sunrise to sunset. During the summer, when days are long, trackmen work fourteen hours on many roads. In emergencies all of these employees are also required to remain on duty much longer than twelve hours.

While it is true that the trainmen are especially responsible for the safety of the traveling public, it is also true, as stated

by the president of a leading railroad, that "of the twenty thousand names on our pay roll you could pick out very few who do not carry the lives of the passengers in their hands." Telegraph operators occupy a peculiarly responsible position in traffic operations, and it is no uncommon thing for a coroner's jury to ascribe the cause of a railroad wreck to the negligence of a telegraph operator who had been on duty for an excessive number of hours. Railway trackmen are the poorest paid and hardest worked of all employees. They handle heavy material, such as cross-ties and steel rails, and even heavy cars. Both on their own account and on account of the safety of the traveling public, the hours of labor of these unorganized classes of railway employees should be reduced to eight.

The legislation of the several states affecting the hours of employees limits such hours to ten or twelve, and in five states contracts for a longer time are invalid, and a company so contracting is liable to a penalty. The constitutionality of such statutes can now probably be sustained under the decision of the United States Supreme Court on the Utah mining law. Railroad labor, however, is undoubtedly covered by the interstate powers of Congress, and a federal law regulating the hours of labor would be constitutional. The limitation of continuous runs by engineers or continuous service by telegraph operators or switchmen without a period of sufficient rest, as well as other regulations affecting the surroundings and dangers of the employment are within the province of Congress. The Industrial Commission has recommended that Congress enact a code covering all the conditions of employment of railroad labor throughout the United States. Such a code would have the advantage of simplifying the conditions throughout the country, and, by the force of example, would lead the states, it is hoped, to voluntarily adopt the code in cases where Congress cannot properly interfere. This the commission believes to be one of the most important efforts in the labor interest to which the attention of Congress can possibly be invited.[1]

[1] In 1907 Congress passed an act limiting the hours of railway labor. — Ed.

CHAPTER XX

SOCIALISM

1. The Communist Manifesto[1]

I. Bourgeois and Proletarians[2]

The history of all hitherto existing society[3] is the history of class struggles.

Freeman and slave, patrician and plebeian, lord and serf, gild master[4] and journeyman, in a word, oppressor and oppressed, stood in constant opposition to one another, carried on an uninterrupted, now hidden, now open fight, a fight that each time ended either in a revolutionary reconstitution of society at large, or in the common ruin of the contending classes.

[1] By Karl Marx and Frederick Engels. Authorized English translation [Chicago, Charles H. Kerr and Company]. First published as the platform of the Communist League, an association of German workingmen, in 1848. It well sets forth the cardinal doctrines of modern socialism. Only Part I is reproduced here, Part II, entitled "Proletarians and Communists," being omitted. — Ed.

[2] By bourgeoisie is meant the class of modern capitalists, owners of the means of social production and employers of wage labor; by proletariat, the class of modern wage laborers who, having no means of production of their own, are reduced to selling their labor power in order to live.

[3] That is, all written history. In 1847 the prehistory of society, the social organization existing previous to recorded history, was all but unknown. Since then Haxthausen discovered common ownership of land in Russia, Maurer proved it to be the social foundation from which all Teutonic races started in history, and by and by village communities were found to be, or to have been, the primitive form of society everywhere from India to Ireland. The inner organization of this primitive communistic society was laid bare, in its typical form, by Morgan's crowning discovery of the true nature of the gens and its relation to the tribe. With the dissolution of these primeval communities society begins to be differentiated into separate and finally antagonistic classes. I have attempted to retrace this process of dissolution in "Der Ursprung der Familie, des Privateigenthums und des Staats," 2d edition [Stuttgart, 1886].

[4] Gild master, that is, a full member of a gild, a master within, not a head of, a gild.

In the earlier epochs of history we find almost everywhere a complicated arrangement of society into various orders, a manifold gradation of social rank. In ancient Rome we have patricians, knights, plebeians, slaves; in the Middle Ages, feudal lords, vassals, gild masters, journeymen, apprentices, serfs; in almost all of these classes, again, subordinate gradations.

The modern bourgeois society that has sprouted from the ruins of feudal society has not done away with class antagonisms. It has but established new classes, new conditions of oppression, new forms of struggle in place of the old ones.

Our epoch, the epoch of the bourgeoisie, possesses, however, this distinctive feature; it has simplified the class antagonisms. Society as a whole is more and more splitting up into two great hostile camps, into two great classes directly facing each other: Bourgeoisie and Proletariat.

From the serfs of the Middle Ages sprang the chartered burghers of the earliest towns. From these burgesses the first elements of the bourgeoisie were developed.

The discovery of America, the rounding of the Cape, opened up fresh ground for the rising bourgeoisie. The East Indian and Chinese markets, the colonization of America, trade with the colonies, the increase in the means of exchange and in commodities generally, gave to commerce, to navigation, to industry, an impulse never before known, and thereby, to the revolutionary element in the tottering feudal society, a rapid development.

The feudal system of industry, under which industrial production was monopolized by close gilds, now no longer sufficed for the growing wants of the new markets. The manufacturing system took its place. The gild masters were pushed on one side by the manufacturing middle class; division of labor between the different corporate gilds vanished in the face of division of labor in each single workshop.

Meantime the markets kept ever growing, the demand, ever rising. Even manufacture no longer sufficed. Thereupon steam and machinery revolutionized industrial production. The place of manufacture was taken by the giant, Modern Industry, the

place of the industrial middle class, by industrial millionaires, the leaders of whole industrial armies, the modern bourgeois.

Modern Industry has established the world market for which the discovery of America paved the way. This market has given an immense development to commerce, to navigation, to communication by land. This development has, in its turn, reacted on the extension of industry; and in proportion as industry, commerce, navigation, railways extended, in the same proportion the bourgeoisie developed, increased its capital, and pushed into the background every class handed down from the Middle Ages.

We see, therefore, how the modern bourgeoisie is itself the product of a long course of development, of a series of revolutions in the modes of production and of exchange.

Each step in the development of the bourgeoisie was accompanied by a corresponding political advance of that class. An oppressed class under the sway of the feudal nobility, an armed and self-governing association in the mediæval commune,[1] here independent urban republic (as in Italy and Germany), there taxable "third estate" of the monarchy (as in France), afterwards, in the period of manufacture proper, serving either the semi-feudal or the absolute monarchy as the counterpoise against the nobility, and, in fact, cornerstone of the great monarchies in general, the bourgeoisie has at last, since the establishment of modern industry and of the world market, conquered for itself in the modern representative state exclusive political sway. The executive of the modern state is but a committee for managing the common affairs of the whole bourgeoisie.

The bourgeoisie, historically, has played a most revolutionary part.

The bourgeoisie, wherever it has got the upper hand, has put an end to all feudal, patriarchal, idyllic relations. It has pitilessly torn asunder the motley feudal ties that bound man to

[1] "Commune" was the name taken in France by the nascent towns even before they had conquered from their feudal lords and masters local self-government and political rights as the "third estate." Generally speaking, for the economical development of the bourgeois, England is here taken as the typical country; for its political development, France.

his "natural superiors," and has left remaining no other nexus between man and man than naked self-interest, than callous "cash payment." It has drowned the most heavenly ecstasies of religious fervor, of chivalrous enthusiasm, of philistine sentimentalism, in the icy water of egotistical calculation. It has resolved personal worth into exchange value, and in place of the numberless indefeasible chartered freedoms, has set up that single, unconscionable freedom, — free trade. In one word, for exploitation veiled by religious and political illusions it has substituted naked, shameless, direct, brutal exploitation.

The bourgeoisie has stripped of its halo every occupation hitherto honored and looked up to with reverent awe. It has converted the physician, the lawyer, the priest, the poet, the man of science, into its paid wage laborers.

The bourgeoisie has torn away from the family its sentimental veil, and has reduced the family relation to a mere money relation.

The bourgeoisie has disclosed how it came to pass that the brutal display of vigor in the Middle Ages, which reactionists so much admire, found its fitting complement in the most slothful indolence. It has been the first to show what man's activity can bring about. It has accomplished wonders far surpassing Egyptian pyramids, Roman aqueducts, and Gothic cathedrals; it has conducted expeditions that put in the shade all former exoduses of nations and crusades.

The bourgeoisie cannot exist without constantly revolutionizing the instruments of production, and thereby the relations of production, and with them the whole relations of society. Conservation of the old modes of production in unaltered form, was, on the contrary, the first condition of existence for all earlier industrial classes. Constant revolutionizing of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation, distinguish the bourgeois epoch from all earlier ones. All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air, all that

is holy is profaned, and man is at last compelled to face with sober senses his real conditions of life, and his relations with his kind.

The need of a constantly expanding market for its products chases the bourgeoisie over the whole surface of the globe. It must nestle everywhere, settle everywhere, establish connections everywhere.

The bourgeoisie has, through its exploitation of the world market, given a cosmopolitan character to production and consumption in every country. To the great chagrin of reactionists, it has drawn from under the feet of industry the national ground on which it stood. All old-established national industries have been destroyed or are daily being destroyed. They are dislodged by new industries, whose introduction becomes a life and death question for all civilized nations, by industries that no longer work up indigenous raw material, but raw material drawn from the remotest zones; industries whose products are consumed, not only at home, but in every quarter of the globe. In place of the old wants, satisfied by the productions of the country, we find new wants, requiring for their satisfaction the products of distant lands and climes. In place of the old local and national seclusion and self-sufficiency, we have intercourse in every direction, universal interdependence of nations. And as in material, so also in intellectual production. The intellectual creations of individual nations become common property. National one-sidedness and narrow-mindedness become more and more impossible, and from the numerous national and local literatures there arises a world literature.

The bourgeoisie, by the rapid improvement of all instruments of production, by the immensely facilitated means of communication, draws all, even the most barbarian, nations into civilization. The cheap prices of its commodities are the heavy artillery with which it batters down all Chinese walls, with which it forces the barbarians' intensely obstinate hatred of foreigners to capitulate. It compels all nations on pain of extinction to adopt the bourgeois mode of production; it compels them to introduce what it calls civilization into their midst,

i.e. to become bourgeois themselves. In a word, it creates a world after its own image.

The bourgeoisie has subjected the country to the rule of the towns. It has created enormous cities, has greatly increased the urban population as compared with the rural, and has thus rescued a considerable part of the population from the idiocy of rural life. Just as it has made the country dependent on the towns, so it has made barbarian and semi-barbarian countries dependent on the civilized ones, nations of peasants on nations of bourgeois, the East on the West.

The bourgeoisie keeps more and more doing away with the scattered state of the population, of the means of production, and of property. It has agglomerated population, centralized means of production, and has concentrated property in a few hands. The necessary consequence of this was political centralization. Independent, or but loosely connected provinces, with separate interests, laws, governments, and systems of taxation, became lumped together in one nation, with one government, one code of laws, one national class interest, one frontier, and one customs tariff.

The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of nature's forces to man, machinery, application of chemistry to industry and agriculture, steam navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalization of rivers, whole populations conjured out of the ground, — what earlier century had even a presentiment that such productive forces slumbered in the lap of social labor?

We see, then, the means of production and of exchange on whose foundation the bourgeoisie built itself up were generated in feudal society. At a certain stage in the development of these means of production and of exchange, the conditions under which feudal society produced and exchanged, the feudal organization of agriculture and manufacturing industry, in one word, the feudal relations of property became no longer compatible with the already developed productive forces; they

became so many fetters. They had to burst asunder; they were burst asunder.

Into their places stepped free competition, accompanied by a social and political constitution adapted to it, and by the economical and political sway of the bourgeois class.

A similar movement is going on before our own eyes. Modern bourgeois society with its relations of production, of exchange, and of property, a society that has conjured up such gigantic means of production and of exchange, is like the sorcerer who is no longer able to control the powers of the nether world whom he has called up by his spells. For many a decade past the history of industry and commerce is but the history of the revolt of modern productive forces against modern conditions of production, against the property relations that are the conditions for the existence of the bourgeoisie and of its rule. It is enough to mention the commercial crises that by their periodical return put on its trial, each time more threateningly, the existence of the entire bourgeois society. In these crises a great part not only of the existing products, but also of the previously created productive forces, are periodically destroyed. In these crises there breaks out an epidemic that, in all earlier epochs, would have seemed an absurdity — the epidemic of overproduction. Society suddenly finds itself put back into a state of momentary barbarism ; it appears as if a famine, a universal war of devastation had cut off the supply of every means of subsistence ; industry and commerce seem to be destroyed ; and why? Because there is too much civilization, too much means of subsistence, too much industry, too much commerce. The productive forces at the disposal of society no longer tend to further the development of the conditions of bourgeois property ; on the contrary, they have become too powerful for these conditions by which they are fettered, and so soon as they overcome these fetters, they bring disorder into the whole of bourgeois society, endanger the existence of bourgeois property. The conditions of bourgeois society are too narrow to comprise the wealth created by them. And how does the bourgeoisie get over these crises? On the one hand by enforced destruction of a mass of productive forces ;

on the other, by the conquest of new markets and by the more thorough exploitation of the old ones. That is to say, by paving the way for more extensive and more destructive crises, and by diminishing the means whereby crises are prevented.

The weapons with which the bourgeoisie felled feudalism to the ground are now turned against the bourgeoisie itself.

But not only has the bourgeoisie forged the weapons that bring death to itself; it has also called into existence the men who are to wield those weapons, — the modern working class, the proletarians.

In proportion as the bourgeoisie, i.e. capital, is developed, in the same proportion is the proletariat, the modern working class, developed, — a class of laborers who live only so long as they find work, and who find work only so long as their labor increases capital. These laborers, who must sell themselves piecemeal, are a commodity, like every other article of commerce, and are consequently exposed to all the vicissitudes of competition, to all the fluctuations of the market.

Owing to the extensive use of machinery and to division of labor, the work of the proletarians has lost all individual character, and, consequently, all charm for the workman. He becomes an appendage of the machine, and it is only the most simple, most monotonous, and most easily acquired knack that is required of him. Hence the cost of production of a workman is restricted, almost entirely, to the means of subsistence that he requires for his maintenance and for the propagation of his race. But the price of a commodity, and also of labor, is equal to its cost of production. In proportion, therefore, as the repulsiveness of the work increases, the wage decreases. Nay more, in proportion as the use of machinery and division of labor increases, in the same proportion the burden of toil also increases, whether by prolongation of the working hours, by increase of the work enacted in a given time, or by increased speed of the machinery, etc.

Modern industry has converted the little workshop of the patriarchal master into the great factory of the industrial capitalist. Masses of laborers, crowded into the factory, are organized like soldiers. As privates of the industrial army they are

placed under the command of a perfect hierarchy of officers and sergeants. Not only are they the slaves of the bourgeois class, and of the bourgeois state, they are daily and hourly enslaved by the machine, by the overlooker, and, above all, by the individual bourgeois manufacturer himself. The more openly this despotism proclaims gain to be its end and aim, the more petty, the more hateful, and the more embittering it is.

The less the skill and exertion or strength implied in manual labor, in other words, the more modern industry becomes developed, the more is the labor of men superseded by that of women. Differences of age and sex have no longer any distinctive social validity for the working class. All are instruments of labor, more or less expensive to use, according to their age and sex.

No sooner is the exploitation of the laborer by the manufacturer so far at an end that he receives his wages in cash, than he is set upon by the other portions of the bourgeoisie, — the landlord, the shopkeeper, the pawnbroker, etc.

The lower strata of the middle class, — the small tradespeople, shopkeepers, and retired tradesmen generally, the handicraftsmen and peasants, — all these sink gradually into the proletariat, partly because their diminutive capital does not suffice for the scale on which modern industry is carried on, and is swamped in the competition with the large capitalists, partly because their specialized skill is rendered worthless by new methods of production. Thus the proletariat is recruited from all classes of the population.

The proletariat goes through various stages of development. With its birth begins its struggle with the bourgeoisie. At first the contest is carried on by individual laborers, then by the workpeople of a factory, then by the operatives of one trade, in one locality, against the individual bourgeois who directly exploits them. They direct their attacks not against the bourgeois conditions of production, but against the instruments of production themselves ; they destroy imported wares that compete with their labor, they smash to pieces machinery, they set factories ablaze, they seek to restore by force the vanished status of the workman of the Middle Ages.

At this stage the laborers still form an incoherent mass scattered over the whole country, and broken up by their mutual competition. If anywhere they unite to form more compact bodies, this is not yet the consequence of their own active union, but of the union of the bourgeoisie, which class, in order to attain its own political ends, is compelled to set the whole proletariat in motion, and is moreover yet, for a time, able to do so. At this stage, therefore, the proletarians do not fight their enemies, but the enemies of their enemies, the remnants of absolute monarchy, the landowners, the non-industrial bourgeois, the petty bourgeoisie. Thus the whole historical movement is concentrated in the hands of the bourgeoisie ; every victory so obtained is a victory for the bourgeoisie.

But with the development of industry the proletariat not only increases in number, — it becomes concentrated in greater masses, its strength grows, and it feels that strength more. The various interests and conditions of life within the ranks of the proletariat are more and more equalized, in proportion as machinery obliterates all distinctions of labor, and nearly everywhere reduces wages to the same low level. The growing competition among the bourgeois, and the resulting commercial crises, make the wages of the workers ever more fluctuating. The unceasing improvement of machinery, ever more rapidly developing, makes their livelihood more and more precarious ; the collisions between individual workmen and individual bourgeois take more and more the character of collisions between two classes. Thereupon the workers begin to form combinations (trade unions) against the bourgeois ; they club together in order to keep up the rate of wages ; they found permanent associations in order to make provision beforehand for these occasional revolts. Here and there the contest breaks out into riots.

Now and then the workers are victorious, but only for a time. The real fruit of their battles lies, not in the immediate result, but in the ever-expanding union of the workers. This union is helped on by the improved means of communication that are created by modern industry, and that place the workers of different localities in contact with one another. It was just this

contact that was needed to centralize the numerous local struggles, all of the same character, into one national struggle between classes. But every class struggle is a political struggle. And that union, to attain which the burghers of the Middle Ages, with their miserable highways required centuries, the modern proletarians, thanks to railways, achieve in a few years.

This organization of the proletarians into a class, and consequently into a political party, is continually being upset again by the competition between the workers themselves. But it ever rises up again, stronger, firmer, mightier. It compels legislative recognition of particular interests of the workers, by taking advantage of the divisions among the bourgeoisie itself. Thus the ten-hours' bill in England was carried.

Altogether collisions between the classes of the old society further, in many ways, the course of development of the proletariat. The bourgeoisie finds itself involved in a constant battle. At first with the aristocracy; later on, with those portions of the bourgeoisie itself whose interests have become antagonistic to the progress of industry; at all times with the bourgeoisie of foreign countries. In all these battles it sees itself compelled to appeal to the proletariat, to ask for its help, and thus to drag it into the political arena. The bourgeoisie itself, therefore, supplies the proletariat with its own elements of political and general education; in other words, it furnishes the proletariat with weapons for fighting the bourgeoisie.

Further, as we have already seen, entire sections of the ruling classes are by the advance of industry precipitated into the proletariat, or are at least threatened in their conditions of existence. These also supply the proletariat with fresh elements of enlightenment and progress.

Finally, in times when the class struggle nears the decisive hour, the process of dissolution going on within the ruling class, in fact, within the whole range of old society, assumes such a violent, glaring character, that a small section of the ruling class cuts itself adrift, and joins the revolutionary class, the class that holds the future in its hands. Just as, therefore, at an earlier period, a section of the nobility went over to the

bourgeoisie, so now a portion of the bourgeoisie goes over to the proletariat, and in particular, a portion of the bourgeois ideologists, who have raised themselves to the level of comprehending theoretically the historical movements as a whole.

Of all the classes that stand face to face with the bourgeoisie to-day, the proletariat alone is a really revolutionary class. The other classes decay and finally disappear in the face of modern industry ; the proletariat is its special and essential product.

The lower middle class, the small manufacturer, the shopkeeper, the artisan, the peasant, all these fight against the bourgeoisie to save from extinction their existence as fractions of the middle class. They are therefore not revolutionary, but conservative. Nay more, they are reactionary, for they try to roll back the wheel of history. If by chance they are revolutionary, they are so only in view of their impending transfer into the proletariat; they thus defend not their present, but their future interests ; they desert their own standpoint to place themselves at that of the proletariat.

The "dangerous class," the social scum, that passively rotting mass thrown off by the lowest layers of old society, may, here and there, be swept into the movement by a proletarian revolution ; its conditions of life, however, prepare it far more for the part of a bribed tool of reactionary intrigue.

In the conditions of the proletariat, those of old society at large are already virtually swamped. The proletarian is without property ; his relation to his wife and children has no longer anything in common with the bourgeois family relations ; modern industrial labor, modern subjection to capital, the same in England as in France, in America as in Germany, has stripped him of every trace of national character. Law, morality, religion, are to him so many bourgeois prejudices behind which lurk in ambush just as many bourgeois interests.

All the preceding classes that got the upper hand sought to fortify their already acquired status by subjecting society at large to their conditions of appropriation. The proletarians cannot become masters of the productive forces of society except by abolishing their own previous mode of appropriation, and

thereby also every other previous mode of appropriation. They have nothing of their own to secure and to fortify; their mission is to destroy all previous securities for, and insurances of, individual property.

All previous historical movements were movements of minorities, or in the interest of minorities. The proletarian movement is the self-conscious, independent movement of the immense majority, in the interest of the immense majority. The proletariat, the lowest stratum of our present society, cannot stir, cannot raise itself up, without the whole superincumbent strata of official society being sprung into the air.

Though not in substance, yet in form, the struggle of the proletariat with the bourgeoisie is at first a national struggle. The proletariat of each country must, of course, first of all settle matters with its own bourgeoisie.

In depicting the most general phases of the development of the proletariat, we traced the more or less veiled civil war raging within existing society up to the point where that war breaks out into open revolution, and where the violent overthrow of the bourgeoisie lays the foundation for the sway of the proletariat.

Hitherto every form of society has been based, as we have already seen, on the antagonism of oppressing and oppressed classes. But in order to oppress a class, certain conditions must be assured to it under which it can, at least, continue its slavish existence. The serf in the period of serfdom raised himself to membership in the commune, just as the petty bourgeois, under the yoke of feudal absolutism, managed to develop into a bourgeois. The modern laborer, on the contrary, instead of rising with the progress of industry, sinks deeper and deeper below the conditions of existence of his own class. He becomes a pauper, and pauperism develops more rapidly than population and wealth. And here it becomes evident that the bourgeoisie is unfit any longer to be the ruling class in society, and to impose its conditions of existence upon society as an overriding law. It is unfit to rule, because it is incompetent to assure an existence to its slave within his slavery, because it cannot help

letting him sink into such a state that it has to feed him, instead of being fed by him. Society can no longer live under this bourgeoisie; in other words, its existence is no longer compatible with society.

The essential condition for the existence and for the sway of the bourgeois class is the formation and augmentation of capital; the condition for capital is wage labor. Wage labor rests exclusively on competition between the laborers. The advance of industry, whose involuntary promoter is the bourgeoisie, replaces the isolation of the laborers due to competition by their involuntary combination due to association. The development of modern industry, therefore, cuts from under its feet the very foundation on which the bourgeoisie produces and appropriates products. What the bourgeoisie therefore produces, above all, are its own gravediggers. Its fall and the victory of the proletariat are equally inevitable.

2. Schäffle's Criticism of Socialism in its General Economic Aspects[1]

Social democracy as a party is the party of the proletariat. To their social inclinations and longings its whole teaching, its whole agitation, is expressly suited. Collective production is to fulfill the very desires of their hearts, it is to overthrow the capitalists, and rid the world of business crises and "wage slavery." Social democracy does not examine whether the evils of free unrestrained capitalist production may not possibly be cured without the entire abolition of private capital. Nor does social democracy think it worth while to consider whether, or to bring forward any proof that, either kind of production could conceivably exist entirely by itself; nor whether, if this were possible, productivity might not severely suffer as a consequence, and thus the impoverishment of all directly ensue. Still less, whether there are not very important social interests, other

[1] Reprinted from Schäffle's Impossibility of Social Democracy. English translation by A. C. Morant [London: Swan, Sonnenschein, 1892]. This work is in the form of letters addressed to a friend. The extract is from the second letter. — Ed.

than industrial, which preclude the possibility of collective production. The profits of capital, the instability of wages, wage slavery, — these must disappear; therefore we must have a democratic collective production. The capitalistic system is incurably bad; therefore the collectivist will insure universal earthly happiness.

I, for my part, hope within the compass of a single letter to be able to bring you striking proof that social democracy in all its democracy and in all its radicalism can never fulfill a single one of its glowing promises; and further, that each and all of the preliminary points above mentioned, over which its fanatics rave so wildly, will, if rightly considered, afford evidence of the impossibility of democratic collectivism.

It is, to begin with, a delusion to imagine that collective production could be organized and administered at all in a republic which from base to summit of the social pyramid was reared on democratic principles. It is no doubt a mistake to aver that collective production or even an entirely collective industrial system is altogether inconceivable, or must come to grief by reason of the overwhelming burden imposed on the central political power. I have myself shown that this is a mistaken view. But it is, on the other hand, quite certain that collective production, the universal panacea of the Social Democrats, would be wholly impossible unless the most carefully graduated authority were vested in the corporate governing organs, authority which should extend from the lowest to the highest and most central parts of the productive system. It would be impossible to allow that either from without inwards or from within outwards there should be constant overturning, changing, and all the confusion of new experiments. But if this is not to be, then a stable and self-sufficient central authority and a similarly constituted administrative system throughout the state will be absolutely necessary. And these two essentials could only for all time stand securely when based on very broad foundation stones of some powerfully moderating elements. But then where would be your democratic republic from top to bottom and from center to circumference? Where would

be your freedom and equality? Where your security against misuse of power and against exploitation? The fact is, collective production on a democratic basis is impossible. . . .

In the second place, collectivism eliminates both nature and private property as determining factors from the problem of the distribution of income. This it does by transferring the ownership of the means of production entirely to the community, and welding all businesses of the same kind — however unequal the natural efficiency of the instruments may be in the various sections — into one great "social" department of industry, worked on the principle of equal remuneration for equal contribution of labor time. This elimination of two out of the three factors in production might be practically feasible, perhaps even just, if collective production were organized on a sufficient basis of authority. At least, experience shows that the state can without difficulty raise and maintain what is necessary for the supply of its various collective agencies, and can carry out a uniform scale of remuneration for a complicated network of officials. But under a purely democratic organization so delusively simple a method of elimination would be by no means practicable. A materialistic and greedy host of individuals, puffed up by popular sovereignty, and fed with constant flattery, would not easily submit to the sacrifices required by the immense savings necessary to multiplying the means of production. Still less would the members of such productive sections as are equipped with the instruments of production of highest natural efficiency be inclined to cast in the surplus product of their labor with the deficient production of others. Strife and confusion without end would be the result of attempting it. . . .

In the third place social democracy promises an impossibility in undertaking, without danger to the efficiency of production, to unite all branches of it, and in each branch all the separate firms and business companies, into one single body with uniform labor credit and uniform estimation of labor time. Herein it goes upon the supposition that the whole tendency of production is towards business on a large scale with local self-complete branches on factory lines. Yet this is a most arbitrary

assumption. Even in trade there will always remain over a mass of small scattered pursuits that entirely escape control, some subsidiary to the arts, some connected with personal services, some in the way of repairs and mending. In agriculture the large self-complete factory system is excluded by the nature of the case. The system of the *latifundia* becomes heavier and more intolerable as the cultivation of the soil becomes more intensive and more scientific. It may well be that in the agriculture of the future there will be more and more introduction of collective administration for purposes of traction, the incoming and outgoing of produce, and for irrigation and draining, for the common use of machinery, and for operations of loading and dispatch. But farming on a large scale, such as is done on the Dalrymple Farm in the Red River district, or on Glenn Farm in California, is not possible as a universal system. If there are any who still think otherwise they would find it very profitable to read the tenth census of the United States, for 1880. For here they will find it shown that, without exception, decade after decade, in proportion as the cultivation grew more intensive, the population more dense, and labor freer, the system of the *latifundia* was disused, peasant proprietorship increased, and the limits of the farm became less extensive. There also the circumstances are very clearly stated which preëminently indicate that agriculture, unlike other industries, tends in the direction of small or moderately large concerns. The denser population becomes, the more do medium and small-sized holdings — with the aid of subsidiary collective machinery — insure the necessary provision for the people. The facts brought forward by Bernhardi in his classical work, "On Large and Small Landed Estates," with respect to raw and net produce, do not fall before the trumpet blast of the social democratic millennium. And how in any case could it be possible without any authoritative organ of control or regulation to draw all the varied and scattered branches of agricultural labor into one simple homogeneous system, and to reduce all labor to terms of average social labor time? . . .

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Social democracy, in the fourth place, promises to the industrial proletariat a fabulous increase in the net result of national production, hence an increase of dividends of the national revenue, and a general rise of labor returns all round. This increased productivity of industry would perhaps be conceivable if a firm administration could be set over the collective production, and if it were also possible to inspire all the producers with the highest interest alike in diminishing the cost, and in increasing the productiveness of labor. But social democracy as such refuses to vest the necessary authority in the administration, and does not know how to introduce an adequate system of rewards and punishments for the group as a whole, and for the individuals in each productive group, however necessary a condition this may be of a really high level of production. For otherwise, of course, there would be no freedom and no equality. Therefore, on the side of productivity again, all these delusive representations as to the capacity and possibility of democratic collective production are groundless. Without giving both every employer and every one employed the highest individual interest in the work, and involving them in profits or losses as the case may be, both ideal and material, it would be utterly impossible to attain even such a measure of productivity for the national labor as the capitalistic system manages to extract from capital profit, even in the face of risk, and with varying scales of remuneration. The introduction of even stronger and more effective guarantees of universal thrift and efficiency in a partially collective system may at first sight appear to be not impossible, as I have shown at length in the third volume of my "Bau und Leben" (Structure and Life of the Social Organism). But this result is impossible if the only means of bringing it about is to be resolutely rejected and denied, namely, the free and ungrudging assignment of a larger proportion of material and ideal good to the real aristocracy of merit. Without a sufficiently strong and attractive reward for individual or corporate preëminence, without strongly deterrent drawbacks and compensatory obligations for bad and unproductive work, a collective system of production is inconceivable,

or at least any system that would even distantly approach in efficiency the capitalistic system of to-day. But democratic equality cannot tolerate such strong rewards and punishments. Even to reward the best with the honor of direction and command is to run directly counter to this kind of democracy. The scale of remuneration in the existing civil and military systems would be among the very first things social democracy would overthrow, and rightly, according to its principles. So long as men are not incipient angels — and that will be for a good while yet — *democratic* collective production can never make good its promises, because it will not tolerate the methods of *reward and punishment for the achievements of individuals and of groups*, which under its system would need to be specially and peculiarly strong.

The fifth, and the most one-sided promise held out by individualism in the Eisenach Programme of 1869, namely, that each member of the productive society should have strictly apportioned to him the exact value of the product of his social labor is a pure delusion. . . . It is true the promise was formerly proclaimed from the housetops by the traveling preachers of social democracy, but it is, nevertheless, a pure superstition, if it be not conscious decoy. Nor has socialism discovered (it is as a matter of fact indiscoverable) the formula for the "fair" wage, that is, the reward exactly commensurate with the value of the product of each man's labor contribution. The proportionate share of each in the value created by a joint product cannot possibly be determined in associated production of any kind, whether under the capitalistic system or in the socialistic plan which excludes private capital. It is wholly impossible to decide how much is contributed by labor and how much by capital to the value and amount of the joint product; for the product is the indivisible result of the joint work of capital, labor, and the gratuitous coöperation of nature. Socialism, it is true, sets aside in two master strokes the factors capital and nature in dealing with the question of distribution, by turning capital into common property for which no question of profit will remain, and by uniting all productive concerns of every kind —

those where the natural factors are favorable, and those where they are most unfavorable alike — into one common calculation, equal contributions of labor time having an equal claim for remuneration. Let us leave out of the question what I have already pointed out to be the serious difficulties of effecting this twofold elimination on democratic lines. Will the "fair" value resulting from each man's contribution of labor even then be secured to all when the necessary needs of the community are first satisfied, and then the rest of the product (valued according to the amount of social labor time absorbed by the various classes of goods) distributed according to the time which each has given to work? By no means. On the contrary, each social worker who contributed more in a given time than his fellows would be disproportionately handicapped at the outset, in a covert manner, by the preliminary deduction of all that was necessary for the public wants. All whose average productiveness was higher than that of their neighbors would in this way come short in their share of remuneration. He who produced goods of a really valuable kind, he who contributed the creative idea which alone can set higher productivity on foot, he who by some act of prudence and watchfulness has saved the revenue, — each and all these would not only fail to receive the exact share that was due to them, they would come very short indeed in proportion to the value of their contribution, the divisible remainder of the products being divided merely according to the time spent in labor. And I say nothing of the fact that the workers may be grossly exploited not only by capitalists, employers, and landlords, but also by those demagogues who have been lifted to the surface out of the mass of the common people by favoritism, by setting aside the honest and capable, and by the indolence of the mass of the people. It is also quite impossible to form an accurate estimate among the laborers alone of the value of the product in proportion to the amount of revenue created by each several labor contribution. The portions of labor time devoted by different laborers in concert to the creation of an indivisible product value are not in equal proportion, still less in any proportion that can be

exactly computed, causally concerned in the amount, and least of all in the value of the entire product. The socialist theory of labor cost which, moreover, could only be true in the case of a constant equilibrium between the social supply and demand as a whole, is as far from having found the key to the "fair" distribution of the value of production as was Heinrich von Thünen when he apportioned to the laborer the geometric mean $\sqrt{ap}$, when a is the requirement for subsistence and p the value of the product, or as the well-meaning Austrian priest Weiss, who recently — excited to Thomist moral studies by the challenge of the Pope — decided that the fair distribution of revenue would be that the capitalist should afford the necessary maintenance to the wage laborer and to himself, while the rest of the profit over and above this necessary maintenance should be divided in proportion to the business capital of the entrepreneur and the unredeemed educational outlay of the wage laborer. It is absolutely impossible to determine the exact proportion which is contributed by capital, by labor, and by nature, or by successive relays of capital or of labor to the amount of the product or to what is to-day its exchange value, but what in the collectivist régime would be its public appraisement. . . .

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We must have the courage to call the child by its right name: to effect a fair distribution of the product among the laborers we must not attempt an exact individual agreement between the income of each and the product value of his work, but we must rather endeavor that all in proportion to their efforts should receive enough not merely to exist in poverty and need, but to live and work as strong and well-equipped members in the service of the community, and to be able to lead a contented life without mercenary aims or ideas. This would not be assured to him by giving him the product of his social labor time, not even nearly so much assured as it is in the capitalistic industrial system by the competition of prices, wages, and rents, or as it may in the future still more effectually be secured by carrying on the conflict respecting wage agreements between adequate class organizations. Not that unrestrained capitalism

would allow of a perfect system of distribution ; but neither would a democratic organization of collective production be at all likely to effect a fair distribution according to labor time without discouraging the industrious and favoring the lazy. The use value of labor, its social meritoriousness would, in a system of reward according to a mere theory of cost, be entirely overlooked.

Social democratic criticism does, it is true, in part uphold the "iron law of wages," according to which the wage laborer receives only according to his social standing what is absolutely necessary for his maintenance, while the "increment" or enhanced value produced by his labor is bloodthirstily sucked up by his employer in the form of profits of capital. I shall presently have to show you that this whole story of the capitalist robber's appropriation of the increment when more closely examined turns out to be entirely baseless ; seen in a clear light it appears as a gigantic exaggeration of the same criticism which Aristotle, in a way that remains unsurpassed, applied to the abuse of property for purposes of exploitation. Marx himself quotes this early critic of the wealthy exploiter, or as Aristotle himself termed it, of Chrematistic.

Not only has social democracy failed to find the mathematical formula of distributive fairness ; it will not and it cannot, in the sixth place, fulfill its claim of preserving that proportion between the social value of work performed by the individual and the social value of reward received by him from the community, which is so indispensable alike in the interests of the individual and of society, and in which lies the guarantee of industrial economy in the service of the whole. This claim, which is daily making itself more clearly felt, though it is not as yet practically attainable, is not an individualist principle but an essentially social one, and true for all time ; for if a worker who does more than his fellows for the service of the community comes by that means to the front, then the whole nation gets the full benefit of the best industry and insight, the fidelity, virtue, and economy of all its most distinguished members ; the community and through it the individuals attain by means of this

proportionate remuneration, both material and ideal, the highest attainable measure of well-being. In a word, the result is the *participation of the masses in the fruits of the best labor*, the fullness of practical equalization and adjustment. But however socially useful this proportional remuneration be, and however little any continuous advance in civilization can be made without its enforcements, the principle is still undeniably, in the highest and best sense of the word, aristocratic. It means the aristocracy of merit, of the highest worth, the superior position and superior enjoyment, both material and ideal, of those who do most for the interest of the whole. This proportionate remuneration is totally incompatible with a one-sided democratic equality. A social democracy which once admitted this principle would no longer be a democracy at all after the heart of the masses. But social democracy does not at all agree with this fundamental requirement of any actual productive social organization; it insists upon distributing the divisible portion of the result of production either in proportion to the *time* spent in labor as has been demanded by some, or communistically, as in the Gotha Programme, "according to reasonable needs," entirely without reference to the merit and productivity of each separate performance. . . .

This leads me to speak of the impracticability of another and a very important promise of social democracy, namely, that of further distribution of the product in a brotherly fashion according to needs. Even if social democracy could prove — which it cannot — that it could guarantee to every man the realized value of his labor, its wage system would still be totally inadequate, and a blow direct to communism properly so-called. The consistent stickler for equality and practical brotherhood would demand a distribution to the weak also according to their needs. As a matter of fact, this view finds a place even in the existing society of to-day. For the primary "capitalistic" distribution of incomes is supplemented by a second, a third, and a fourth, for we have the handing over of a share in the income, dictated by affection, to the family and friends, next the mutual benefits conferred by insurance policies, the action of benevo-

lence and philanthropy towards the unfortunate and the needy, and the apportioning of burdens imposed by the state to the individual's capacity for bearing them.

In every kind of social organization the treatment of misfortune and destitution must, to some extent, find a place; that is the germ of truth which lies at the bottom of communism properly so-called. But collective production with distribution according to the value of the labor contribution (Eisenach Programme of 1869), makes in itself no provision for this need. And worst of all, social democracy makes no attempt to fill up this gap, and even the Gotha Programme of 1879 cannot grapple with it. If in a democratic collectivism it were to be attempted from the outset to apportion men's share, not according to their contribution of work, but according to their needs, the result would be that shortly every portion of the "sovereign people" would appear to be, and would even be, in a great state of need and destitution. Everything would get out of hand, and a hopeless confusion ensue, the only way out of the difficulty being to declare a universal equality of need, a solution most unjust, most wearisome, and most conducive to idleness. Democratic collectivism, therefore, is not more consistent either with the proportionate remuneration of labor according to its value, or with the brotherly distribution of income according to the reasonable needs of each, than is the existing social order.

In the eighth place, democratic collectivism makes a further and most weighty promise in holding out an assured prospect of entirely suppressing all "exploitation," or as Marx expresses it, all sucking up of the unearned increment of labor. I do not deny that, with an unrestrained freedom of capitalistic gain, much exploitation does actually take place, and that such exploitation is even possible to the degree which forces down the wage laborer to a starvation level. But in admitting this I by no means take it as proved that under capitalistic production the grinding down of labor by capital cannot be prevented. Still less is it proved that the whole of capital profits over and above that portion which compensates the entrepreneur for his expenditure of time and labor is so much stolen from the wage

laborer of the real value created by his paid labor. Since, as I have shown, the real value contributed by labor to the product cannot be determined, it is as impossible to prove that exploitation would be entirely suppressed in the "state for the people," as that the absorption of the increment actually goes on under the capitalistic régime, and thus the profits of capital are by no means proved to be a form of exploitation. In the social state, just because no more individual home production would go on, a distribution of the entire product of labor or its full realized value would not be possible; collectivism would open a far wider field for exploitation than any hitherto known system of production, for communism is a thoroughgoing and gigantic system of appropriation of the increment. This whole one-sided individualistic representation of the exact balancing of the reward and the performance of labor is entirely fallacious, though it has been so frequently preached to the proletariat. The highest gains of capital are sometimes thoroughly well-merited, in cases where the entrepreneur, mainly by his own skill in manipulating and placing his capital or his labor, or it may be his capital only, has achieved a great success in production. How much of the value of the common product is to be ascribed to the influence of capital and how much to the share of paid labor, is, as I have said, not determinable. To designate, as does Marx, the whole profits of capital *Plunder*, carried on by appropriation by capital of the product value created by wage labor, is in itself a plundering outbreak of hypercritical logic. It is wholly vain to prophesy that in the ideal state of democratic collective production the door will be entirely closed against all exploitation, and all possibility of the depression of wages to a starvation limit forever at an end. The private capitalist of course could no longer exploit the wage laborer, since all private capital would be over and done with. But laborer could very really exploit laborer, the administrators could exploit those under them, the lazy could exploit the industrious, the impudent their more modest fellow-workers, and the demagogue those who opposed him. Under such a system above all others it would be impossible to set any limits to this. It would

be the very system to lend itself most freely to exploitation, as it would have no means of defending itself from practical demagogy and the discouraging of the more productive and more useful class of labor. With the quantitative reckoning of labor time, with the setting up of a "normal performance of work," with the merging of intensive and extensive measurement of labor, things might reach such a pitch that Marx's vampire, the capitalist, would show up as a highly respectable figure compared with the social democratic parasites, hoodwinkers of the people, a majority of idlers and sluggards. The state would be the archvampire, the new state, whose function it would be to provide pleasure for the people and to fill up for each and all the highest measure of earthly bliss! Again, in the inclusion of all the land into state-leased property, or the absorption of all ground rents in the form of taxes, as Henry George's land-nationalization scheme proposes, there would be no guarantee against exploitation in the form of lavish state expenditure for the sweetening of the populace.

In the ninth place, social democracy makes another impossible promise, — *the avoidance of all paralysis of trade.*

The misery of undeserved loss of employment is the greatest terror which besets the industrious poor who have no possessions. Social democratic criticism ascribes the terrible distresses of each great paralysis of trade to the capitalistic system of production, and to no other cause. There are two peculiarities in this system, they say, which of necessity are forever bringing round these stoppages of trade; one is the tyranny of the economic situation, which society fails to regulate, the other the lack of purchasing power among the masses owing to the lowness of their wage as compared with the value created by their labor. Among the innumerable competing branches of industry, each, they say, produces recklessly into the air without knowledge of the demand, and without knowledge of the extent of their rivals' production; hence the economic situation, the power of uncontrollable social causality, becomes predominant in capitalistic society, as Lassalle has pointed out with great skill and clearness; supply and demand from time to time become glaringly

out of proportion; the disturbed equilibrium can only be restored through a stoppage of trade. The other factor in these trade crises of industrial production on a large scale is, according to these same critics, that the labor wage does not increase in proportion to the rising productivity of labor and capital; this results in production for which there is no effective demand, or overproduction; hence paralysis of trade, the people famishing in the midst of a superfluity of production, masses of hungry laborers able and willing to produce, but no employment for them. Both these evils collectivism promises to remove: an absolutely closed system of collective production resting on an accurate estimate of demands and needs will hold in constant equilibrium every kind of supply with every kind of requirement, and the laborers, who in return for their contribution of labor time are to receive the whole produce of their labor in due portions, will thus be throughout the whole range of production competent to purchase and to consume; hence in the "social state" there will be no paralyses of trade. Such is the social democratic teaching. We cannot, I freely allow, do enough in the endeavor to combat and avoid the misery of these trade stoppages; it hangs like the sword of Damocles over the heads of the non-propertied laborers; it embitters the existence of every one of them who reflects and who has the care and nurture of a family to provide for. But for all that it must not be believed that exclusive collective production, even on democratic lines, would entirely put an end to the overwhelming force of the economic situation, or that insufficiency of wage is the main cause of such crises and the great disturber of the equilibrium between supply and demand. The crises are due to the action, not only of social, but also of natural conditions, and of these overpowering chains of circumstances a very large proportion would be insurmountable even for the socialistic state. The alternations of good and bad harvests, the varying degrees of severity in successive winters, revolutions in technical appliances, the unregulated shifting of the population, the lack of organized emigration or any trustworthy intelligence bureau for labor, the entire freedom of choice as to employment and place of abode, and of demand for commodities, all these and

other circumstances have an inevitable share in such disturbances of equilibrium. Even the state of the future could not gain an entire mastery over all these causes, while in the state of to-day it would be possible to introduce strong and sufficient preventives by a positive social and industrial policy. Collectivism on an authoritative basis would perhaps master the evil to a certain extent, of course only by means of strenuous regulation of needs — which would be at the cost of individual freedom of demand and compulsion of individual tastes in the selection of productive work — and by constant political interference with the movement of population ; but it still remains doubtful whether these means would not altogether entail a larger amount of unhappiness of a different kind. Democratic collectivism, by the very fact of its freedom, cannot and dare not address itself to the performance of this tremendous task ; the eternal unrest and disturbance of this administrative guidance of production, together with the capricious changes of desire and demand in the sovereign people, would most certainly increase to an extraordinary degree the tyrannous fatality of these ever-recurrent crises. The constant absorption by capital of the increased value created by labor, which is supposed to be a further cause of the crises, is not, as I have said, within the range of proof ; and so far as exploitation does exist it is not to be combated by collective production, but by quite other means ; and further, if the reduction of wages to a starvation level were in reality the rule, the absorption by capital of labor-created value would cause not paralysis of trade, but the increased production of those goods and commodities which the capitalists specially desire.

Democratic collectivism promises, in the tenth place, the abolition of the wage system and of all private service, which involves the continuous enslavement of the proletariat. " Wage slavery " is to be superseded by a system of universal service directly for the community; the whole of productive labor would be placed in the position of a paid official department of the democratic republic. There is no doubt that private service is in principle very irksome and oppressive to workmen of high self-respect and personal superiority. But it has not been proved

that for the great mass of existing wage laborers the position of private service could not be made tolerable by some other means, nor has it been demonstrated that the élite of the working classes cannot find within the limits of the capitalistic sphere of industry leading positions which are also suited to satisfy a high sense of self-respect. It is certain, on the other hand, that there is no possible organization of society in which no one must obey and every one can rule, or in which all ruling would be mere idle pleasure and satisfaction. In the existing order of society the mass of officials who make up the administration, both central and local, although they have the great advantages of immediate and uninterrupted self-supporting labor, have it at the price of very strict obedience towards often the most insignificant and spiteful nominees of favoritism, and in the face of very great uncertainty as to impartial and fair advancement on the ladder of promotion. The freedom of the individual would lose in a degree which democracy would by no means tolerate. Popular government very easily degenerates into mob rule, and this is always more favorable to the common and the insignificant than to the noble and distinguished. Hence democratic collectivism itself would be likely to wound in a high degree the most sensitive self-respect, without leaving as much freedom as does the present system of private service in the choice of employment and employer, or of a place of abode. Its only equality would be that no one was in any wise independent, but all slaves of the majority, and on this point again democratic collectivism would come to grief, and utterly fail to keep the promises it makes to the better class of workingmen, whose self-respect is injured by the existing state of things.

Before we take leave of our criticism of social democracy on the industrial side, allow me to submit to you two further considerations which suggest answers to two questions that are still pending. In the first place, it might be asked whether proportional collectivism at least does not admit of being so reasonably formulated as to be within the range of practical discussion or possible acceptance. And conversely the question suggests itself, whether radical collectivism, even in its most practicable

form, will not need to give way to the requirements of other social interests. Both these questions we have to formulate and to answer, following our chosen method of stating them in the best and most practical terms that we can discover.

First, to deal with the possibility of a more practical formulation of proportional socialism, and to criticise such a formulation when made.

So far as I know, social democracy to this day has made no declaration through the lips of the literary and political leaders of the proletariat regarding the positive features of a system of distribution which should effectually reconcile *the interest of the society as a whole in the highest possible productivity of national labor*, with *the interest of each individual in securing a proportionate share of the result according to the measure of his performance*. When they began to tend so decidedly towards the communism of Marx this question ceased to exist for them. And even proportional socialism was so radical and utopian as not even to state it.

For your enlightenment I will endeavor to supply this avowed deficiency from the posthumous works of Rodbertus, this great thinker having, though himself no social democrat, made more definite proposals than any one else has done, in the direction in which social democracy would have to look for its first attempt at a practical realization consistent with its principles, in his studies on normal time, and the normal workingday, further on normal estimation of value, and finally on the normal division or distribution between the leaders of production and the producing laborers.

So far as I understand Rodbertus the fundamental outlines of this question are as follows: in order to carry out the distribution of the net result of national production among *all* the workers in proportion to their contributions to it, without cutting short the better laborers on account of the less good, and without endangering productivity, it would be necessary, he thinks, to reduce the varying individual performances of the several laborers to a normal common measure. This measure would be deduced, as regards the common measurement of

labor of different kinds and in different branches of business, from the normal *time*-labor day, and, as regards the reduction to a common denominator of unequal individual performances in equal labor time, from the normal *work*-labor day.

For astronomically equal portions of labor time would nevertheless mean different amounts of exertion and of self-sacrifice for society, according to the differing nature of the employment. We must, therefore, reduce the working labor time to an average social labor time, — the normal *time*-labor day. Suppose this to be ten hours, then six hours of underground labor would be counted as equal to it, as also twelve hours of spinning or weaving. Or, what would come to the same thing, the normal time-labor day would be in mining six hours, in textile manufacture twelve hours, the mining *hour* being equal to one and two-thirds, and the textile hour to five sixths, of the average labor hour. The normal time-labor day would serve to adjust periodically the relationships between laborers who were differently strained according to the nature of their work, and to ascribe to each kind of work and occupation its normal proportionate share of the benefit of their various labors in the normal time measure, and relatively to decide the due limits of those proportions. This, it is said, would insure an individually fair wage ; for if a man in the mining industry worked three instead of six hours, or in spinning or weaving worked six instead of twelve hours, he would receive a share of remuneration apportioned only to a half normal time and labor day.

But the normal time day would not be sufficient to insure a fair equilibrium of work and reward ; for in a given time spent on the same kind of labor, one individual will accomplish less, another more. The combined interest of the whole nation, therefore, and the necessity for a fair wage as between individual laborers demand that an average of normal achievement in a specified labor time should be struck ; in short, the establishment of a unit or measure of normal work. We must normalize also "according to work." This would be done somewhat thus : after the normal time-labor day had been fixed for each kind of work at six, eight, ten, or twelve hours, as the case might be

(according to the hardness of the work, etc.), there would need to be fixed also for each kind of labor the normal achievement for the said time-labor day; that is, a normal rate must be struck of the quantity of work which an average laborer, with average industry and average skill, can get through in his special department during the said time-labor day. The quantity arrived at would then represent in each kind of labor the *normal labor quantum* of a normal time-labor day, and would thus constitute the normal *work-labor day* in each department, which would be equal to what each laborer would have to get through in his normal time-labor day, in order to be paid or accredited for a full labor day, that is, for the normal work-labor day. If, therefore, the workman were to accomplish in a full time-labor day either half as much again as the normal work, or half of it, he would be credited, in coal mining for example, with one and a half or one half day of normal work time for his day of six hours, and in textile industry, on the same assumption, with the same amounts for the day of twelve hours.

Contributions of labor time would thus be made commensurable and capable of comparison and adjustment, not only between the various kinds and divisions of labor, but also between the various grades of individual capacity. That part of the national product which was to fall to the share of national wage labor as a whole, would be distributed among the wage laborers in the above proportions. Hence if this portion were to increase in amount owing to a further regulation which we shall presently explain, the share of each several laborer would proportionately rise with the rising value of national production. We should thus, it is supposed, have reached the basis of an individually fair "social-wage system," a system which gives better reward to the better laborer, thus adjusting the claims and interests of laborers among themselves, which secures the productivity of national labor by giving different rewards to good and to bad laborers, thus recognizing the claim and interest of the society as a whole, and lastly, one which secures the proportionate rise of the individual labor wage, with the rising productivity of national labor.

But a fair share for wage labor would be thus only partially and imperfectly secured, unless a more complete system of social valuation of products in normal labor coin instead of in metal coin were introduced.

Rodbertus, in fact, wishes to see his normal work-labor day (equal to ten working hours) made the common measure of the value of labor products as well as of amounts of labor. To all the above computations the most searching of all must be added; the normal work-labor day must be erected into work time or normal time, and from this work time or normal labor, according to this balanced average of labor, must be computed not only (1) the normal value of the product in every manufacture, but also (2) the amount of reward to be assigned for each contribution of work.

Let us suppose that it is possible, as a matter of fact, to carry out these calculations. To effect the normalizing of the product value according to work time or normal labor, it would be necessary to state the normal work-labor day (which in each kind of labor stands for one day, a varying number of hours according to the nature of the employment, and which represents a product quantity equal to a normal day's work), in terms of work time or normal labor, and to divide it into the same number, of ten hours of work, in all branches of labor. By this work time the product of every kind of labor would be measured. A product quantity which was equal to a full normal day's work, were it the result of only a half normal time-labor day, or of two normal time-labor days, would represent or be worth one workday (ten work hours); a product quantity which was equal to half a normal day's work, whether or not it were the result of any specified normal labor time, would represent or be worth half a workday, or five work hours; and so on. The product of any labor which represented one work hour would thus, according to this scale, be equal to the product of any other kind of labor which represented one work hour or, to express it more generally, *products of equal work time would be equal to each other in value.* This expresses approximately the view of Rodbertus.

A real normal labor day, both time-labor day and work-labor day, would be indispensable for any industrial system which should seek by a resolute state interference to balance, on the one hand, by the distribution of wages, "the claims and interests of the workmen among themselves," and on the other, for the sake of productivity, "the claims and interests of the workmen with the claims and interests of the whole people." It would be indispensable, not only for a state-regulated capitalism with private property in the means of production, such as Rodbertus conceives of as possible under a powerful monarchy, but indeed for every kind, and especially so for democratic socialism, if it is to return to the principles of the Eisenach Programme, and make work and enjoyment proportional for every one, instead of following the communistic Gotha Programme of distribution "according to reasonable needs." The only difference would be that any socialistic system would have to divide the whole result of production, after subtracting the amount necessary for the public need, according to the rate of the contributions of normal time, and to assign the share of each in products valued according to the normal cost in work, while Rodbertus, who is an advocate of private property, would need to add to the above stipulations yet another, namely, the periodical regulation or *normalizing* of wage relations in all branches of industry.

Rodbertus is quite clear on this last point; under the authority of the state the fixed wage must also be established in every department of labor for the normal labor day in that department, settled by the concerted action of employers and employed; and these settlements must be periodically renewed, and must also rise in proportion to the rising productivity of labor. Rodbertus indeed recognizes quite clearly the difference between regulated capitalism and regulated (non-communistic — non-anarchist) socialism. If the laborers only, he proceeds to say, had a right to share the national product value, then each laborer would have as his due the whole result of the normal labor contributed by him, and the whole national product value would be divided *among the laborers alone*. For instance, if a laborer had

contributed one and a half normal days' work in his whole normal time-labor day, he would then receive also in wages a return for fifteen work hours; but only a return for five work hours if he had only accomplished half a normal day's work in his whole normal time-labor day. The whole national income, worth, say, x normal labor, would go in labor wage alone, which would amount to the value of x normal labor. But such a condition of things, however much it may hover before the eyes of a labor leader, is, in Rodbertus's opinion, wholly unattainable. Under no possible social conditions could the laborer demand the entire product of his normal labor; his wage could never represent the entire normal labor contributed by him; there must, under any circumstances, be first withdrawn that which we have to-day in the form of rents and profits of capital. Ground rents and capital profits Rodbertus regards as compensation for "indirect" labor, for the industrial function of the leadership of production; thus, even if the laborer in his normal time-labor day has contributed ten hours normal labor, he may yet chance to receive in his wages a return for only three hours' work,— in other words, he might be allotted the product value of only three work hours; for the product value of one work hour might perhaps represent his contribution to the needs of the state, while three might go in each of what we now call ground rents and capital profits.

It is true that this further regulation of shares would be simply superfluous if once private ownership in the means of production were abolished; but from the normal labor day, normal time, normal money, normal valuation of commodities and of kinds of labor performance, no system of practical collectivism could escape. It would rather be the case that normalizing socialism would undergo still further development, in that normal value would have to be altered backwards and forwards with the changing value in use of commodities and labor services; for otherwise supply and demand could not be held in equilibrium, and the constant free circulation of the forces of labor among the various departments of it would not be secured.

Let us assume then that this whole process of normalization would be carried out on democratic lines : would even so its aim and end be absolutely secured? Even allowing myself to suppose, in answering this question, that the management of the national industry were characterized by the best intentions and the best insight and perspicacity, still I cannot feel convinced that it would be so. In every department into which the process of normalization was carried it would practically meet with almost insuperable difficulties and enormous obstacles no less formidable than those which the capitalistic industrial system itself has to face in times of strikes. How will it be possible to bring about a common agreement among the various departments concerning an all-round fair reduction of the particular to the normal time-labor day? How is it conceivable that we should arrive at a fair average normal time day for the several branches of the same department of trade, which would never be all equally favorably constituted, or at a generally recognized common measure of normal work between the various departments, and within each department between the various branch concerns? How shall we constitute an effectual test of normal *quality* of work, and how insure reduction of recompense for inferior achievement? How will it be possible to regulate to the satisfaction of all the rise and fall of the normal scales of value in proportion to the fluctuations of demand? How compute the values of the respective labor of many, which goes to the construction of a single product, and cannot thus be divided out into individual performances piece by piece? Even with the best organization, wherever normalization was concerned with medium values, we should constantly lose the normal standard of the individual, that is, the exact remuneration of each according to his own merits, and moreover his coöperation in the work of estimating values. There would be an end of all individualizing free determination of the values of products and achievements. I do not therefore believe that democratic normalizing socialism would accomplish better results or even as good as in the existing national industry are at least approximately accomplished by the organized

competition of prices in the professional sphere and in the markets of trade.

But how would it be if the democratic management of society turned out to be neither intelligent nor upright, neither honest, nor prudent nor wise? How then would the purely socialistic distribution of products appear when compared with the capitalistic system of wages, rent, and prices, limited by the law of a positive social policy, and regulated within those limits by professional concert, and by market estimates? Assuredly not to advantage. What possible guarantee would there be that the masses, the majority, with its unlimited potency, would always hit upon the right result, and that hence, under democratic collectivism, less unfairness would on the whole be perpetrated than under a well-ordered lawful capitalism? There would be *no* possible guarantee, not the remotest.

Thus radical collectivism would inevitably fail, even if realized in the most practically plausible form which has yet been devised for it.

The above critical exposition may be considered, I think, to exhaust the cardinal points of the best conceivable programme of social democracy on the industrial side, and to demonstrate the impossibility of the plan by the help of carefully thought out and most pertinent considerations. It is evident that this very extreme of individualism, which runs in the veins of socialism no less than of capitalism, fundamentally vitiates the promises of the social democrats. Democratic collectivism is impossible and cannot even on the industrial side fulfill a single one of its promises. If it would become practicable it must alter its practice considerably and introduce authority into its scheme, with which addition socialism would become conceivable, though it would even then be demonstrably no better than positive improvement based on the existing system of society. This would, it is true, be far from introducing the universal compulsory labor system, as some critics have declared, who, by proving too much, end in proving nothing, but neither would it result in that freedom and equality for all to which the proletariat aspires, and which social democracy holds out to it in

prospect. For the sake of a nebulous improvisation, a visionary scheme which bears plainly on its front the impress of the disappointment of all its promises, — for the sake of this, social democracy is ready to break in pieces the whole existing framework of society, and with it the happiness of all the propertied classes, and to uproot the whole nation from the ground of its historic development, — an impossible task, a hopeless undertaking!

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